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BULLETIN

OF THE

BRITISH

ORNITHOLOGISTS' CLUB

EDITED BY

DR. JEFFERY G. HARRISON

Volume 77

1957

PRICE TWO SHILLINGS AND SIXPENCE

PREFACE

NINE MEETINGS of the Club were held in 1957 and nine numbers of the Bulletin were issued to produce a Volume of 160 pages for the second year in succession. The supply of papers continues to be most satisfactory and new contributors have appeared from many parts of the world.

At the onset of my second term of office as Editor, I would like to take this opportunity to thank all those who have helped me with the Bulletin during the past five years. An editor can only edit when the material is available, and the fact that the Bulletin has been able to expand during this time is due to the increasing support which it has received from many people. Two steps have helped to bring this about ; the fact that we have increased the number of free copies of the Bulletin to contributors and that they all receive proofs of their papers.

Last year the Committee felt that there was an urgent need to increase the number of members and subscribers in order to maintain the Bulletin in its present state. The success of their campaign is revealed this year, for we have had 40 new members, of which 23 are from abroad, and 12 new subscribers from overseas. This is the largest increase since well before the war. Still more are wanted.

Mr. C. N. Walter has once again prepared the List of Authors, including the separate list of newly-described forms, which proved a popular innovation last year. The Club are greatly indebted to him.

The numbers attending the meetings for the year were as follows:— Members of the Club, 306 ; Members of the B.O.U., 32 ; Guests, 57 ; Guests of the Club: Dr. W. H. Bierman, Mr. and Mrs. R. E. Darnton, Monsieur G. Jouanin, Mr. and Mrs. R. E. Moreau, Senor J. A. Valverde, Dr. and Mrs. Charles Vaurie, Mr. and Mrs. D. Vesey-FitzGerald.

Total: 406.

JEFFERY HARRISON.

Sevenoaks, December 1957.

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CORRIGENDA, Volume 77

p. 86, line 12, "and Northern Rhodesia" should be "and perhaps in Northern Rhodesia."

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The five hundred and fifty-second meeting was held at the Rembrandt Hotel on Tuesday, 18th December, 1956, following a dinner at 6.30 p.m.

Chairman: Mr. C. W. Mackworth-Praed.

Members, 40; Guests, 10; Total, 50.

The Gyr Falcon and some other Birds in Iceland

Mr. Philip Wayre showed his magnificent film taken on his expedition, with his wife and Dr. Gordon Jolly, to the Myvatn area of north-east Iceland last June. The film opens with shots of Fulmars taken from the ship in the north Atlantic and is followed by sequences of Gyr habitat in the north of Iceland, the finding of Gyr eyries and numerous outstanding shots of Gyrs in flight and at the nest. The second part of the film deals with ducks around Myvatn and on the Laxa River, with sequences and close ups of Harlequins, Long-tailed Duck and Red-necked Phalaropes. There were also some fine pictures of the famous Eider Duck colony at Laxamyri.

A paper on the Icelandic Gyrs will be appearing in a subsequent Bulletin.

Exhibition of a Melanistic Yellow Bunting, *Emberiza citrinella* Linnaeus

by Dr. James M. Harrison

I am exhibiting on behalf of Mr. Tore Nielsen a melanistic adult female *Emberiza citrinella citrinella* Linnaeus.

This bird was obtained at Myrland, Hoyland, in the Stavanger district, an area of continuous pine and spruce woods, in southern Norway, on 10th December, 1955. The specimen shows a general melanism which gives it a curious dark greeny-yellow appearance, almost the colour of some heavy machine oils, particularly on the upper breast. The face, especially the chin and posterior edges of the ear-coverts are very dark, as are also the flank striations. There is a little lighter greenish-yellow on the lower throat and upper abdominal region. The chestnut of the rump is much dulled by the general melanism as is also the brown of the mantle.

Mr. Nielsen's specimen first came to my notice through the kindness of Mr. R. G. Shannon and it is perhaps not without significance that when recently reviewing this species, I had the opportunity of examining a good series of Norwegian skins sent me by Dr. Holger Holgersen of the Stavan-

ger Museum: some of these were from the Stavanger district. Amongst them I found some very dark females, and it would seem possible that the population here carries a hereditary factor for melanism, and that the character seems to be sex-linked. However it must be stressed that the condition is not confined to this district of Norway as I have seen one or two females equally dark in southern Swedish breeding birds. The specimen is in the Stavanger Museum.

Exhibition of a New Race of the Little Owl from the Iberian Peninsula

by Dr. James M. Harrison

It has been presumed that the Little Owl, *Athene noctua*, in the Iberian Peninsula has been represented by two recognized forms. The form inhabiting Spain generally has always been accepted as *A.n.vidalii* A. E. Brehm, while within recent times the population inhabiting southern Portugal has been separated by von Jordans and Steinbacher as *A.n.grüni*. The "terra typica" of *A.n.vidalii* is Murcia in southern Spain.

Recently while in the Santander Province of north-western Spain I was fortunate enough to collect four specimens of this species; two were collected personally and two were obtained for me by Dr. David Harrison. On securing the first we were both immediately impressed by the extremely dark general colour. All four specimens, two males and two females, are acquiring their fresh autumn plumage; three are adults and one of the males is an immature bird.

The series has been compared with full series of the nominate race, *A.n.noctua* from Central Europe, including birds from southern Germany, Switzerland and Hungary, as well as with specimens of *A.n. vidalii* from Holland, France and the British Isles. They were also compared with strictly comparable material from southern Spain, southern and northern Portugal, Italy and eastern Europe.

No comparably dark specimens were found in any of the populations investigated. The four specimens of the new race all show marked darkness both above and below; this is particularly evident on the wing coverts and on the bastard wings, but is also apparent on the mantles. Since these characters are 100 per cent in the series, I have no hesitation in describing the population as new and propose for it the name

Athene noctua cantabriensis ssp.nov.

Description of Type: Female adult, 18th September, 1956, near Laredo, north-west Spain. Registered No. 37.1.56. Collected by myself and in my collection. Restricted type locality, Laredo, north-western Spain. Upper parts: crown, mantle, back and rump very dark purplish-brown, nearest to Maerz and Paul, *Dictionary of Color*, (Plate 16, C.12) i.e. between Biskra Date and Bronze Lustre. Crown narrowly spotted Walnut Taffy (M. & P. Plate 12, E.6), slightly spotted whitish towards the nape. Mantle, back and rump spotted whitish; lores dusky, above base of bill, whitish; superciliary stripe white; ear-coverts dusky; throat and sides of neck below ear-coverts whitish. Wing-coverts, scapulars and bastard wings deep purplish-brown (M. & P. Plate 16, C. 12) between Biskra Date and Bronze Lustre. Outermost primaries barred whitish, rest, and secondaries,

barred Taffy Walnut (M. & P. Plate 12, E, 6). Rectrices near to Bronze Lustre, bars Walnut Taffy. Under parts: whitish, freely striated longitudinally with dark purplish-brown (M. & P. Plate 16) between A 8, Castor and A 9, Owl.

This form is darker in freshly moulted autumn plumage than any other known race of the species. In breeding dress *A.n.vidalii* from southern Spain matches breeding material from elsewhere in the range of that race, including examples from the British Isles.

An immature example obtained in October 1930 at Barcellos in northern Portugal (A. Wattison Crail collection, Royal Scottish Museum, Reg. No. 1950-49.62), although still largely in worn juvenile plumage, has just acquired the freshly moulted wing-coverts, bastard wings and primaries, which match exactly in colour and darkness those of the new form. No similar specimens can be found in freshly moulted autumn material from central Europe or the British Isles.

In considering the ranges of the described races of *Athene noctua* in the Iberian Peninsula, it would seem that *A.n.viadlii* A. E. Brehm is the form occupying the southern half of the Peninsula, i.e. the Mediterranean revier, but it is apparent that much research is needed to determine the extent of its range to the northward and also its altitudinal range.

In southern Portugal *A.n.vidalii* is replaced by *A.n.grüni* von Jordans and Steintacher.

The range of the new form remains to be exactly determined, but it would seem probable that in addition to the Atlantic coast of Spain and the adjacent country lying seawards of the Cantabrian Mountains, it extends into northern Portugal, as evidenced by the specimen referred to above.

A comparison of the three races in the Iberian Peninsula reveals that in fresh autumn dress the new form represents the darkest race, that *A.n.vidalii* is next in point of darkness and that *A.n.grüni* is the palest. In so far as the breeding plumages of these forms are concerned, the above holds true of the two last named, and it is anticipated that the breeding dress of *A.n.cantabriensis* will also be found to be darker than the other two forms. I think there is little doubt that some intergradation between *A.n.cantabriensis* and *A.n.grüni* will be found to occur towards the south in Portugal, but only close examination of adequate material will establish this fact.

Acknowledgements: I would express my grateful thanks to the following: firstly to Mr. A. D. Macdonald and the authorities at the British Museum, Natural History, for facilities to compare my series with the material available in the National Collection. T. Dr. A. C. Stephen, Director of the Royal Scottish Museum, Edinburgh, for the loan of material. To Professor A. von Jordans, Director of the Zoological Research Institute and Museum Alexander Koenig, Bonn, for the loan of Spanish and Portuguese specimens. To T. B. Wildman, British Vice-Consul at Santander and to Senhor Don Emriques G. Cammino, for very kindly arranging formalities and facilities for us whilst we were in Spain, and finally to Dr. David Harrison for having secured for me two of the four specimens upon which this communication is based.

Temporary Melanism in a Spotted Dove

by Mr. Derek Goodwin

Received 18th July, 1956

In August 1955 I was given two young Ceylonese Spotted Doves *Streptopelia chinensis ceylonensis*. The parents were imported birds,

presumably wild caught, and were typical in appearance. They were housed in a large outdoor aviary and, besides the two given to me, produced several other young, all of which developed normal colouration.

My two specimens, a male and a female, showed the normal juvenile plumage. They were fed on millet, wheat, wholemeal bread soaked in milk and smaller quantities of chopped peanuts, cheese, grit, and minerals as sold for domestic pigeons. They were kept in a cage (indoors, but in a light, well-ventilated room) 3 feet by 18 inches by 18 inches. In this they could, of course, take very little flying exercise, but they were allowed to fly about the room for two or three hours each day.

When about four weeks old the male escaped. Nine days later he was caught, starving and greatly emaciated, in a farmyard eight miles away and returned to me. It was interesting that, although he had been feeding himself for some time prior to his escape and was still just able to walk and fly, he made no attempt to pick up food offered to him but reverted to infantile food-begging and had to be hand-fed again like a nestling. As soon (within fourteen hours) as his strength began visibly to return he again pecked up food in adult manner. Within four days he had, to all appearances, completely recovered. During his absence he had shed a great many feathers and this post-juvenal moult continued smoothly and relatively quickly. The new adult plumage was in every way typical.

The female's moult started about two weeks later and took much longer for completion. All her new feathers were abnormally dark in colour. Those on mantle and wing-coverts had the normally greyish brown areas of almost as dark a blackish sepia as the tips of normal feathers. The normally fawnish pink areas on either side of the central blackish marking were greatly reduced in area (almost absent on many feathers) and of a darker, more tawny rufous shade. The feathers of the forehead, crown and nape were blackish sepia, contrasting with those elsewhere on the head, which were only slightly dingier than in the normal bird. The pink feathers of the breast and underparts had blackish tips, similar to, but much more extensive than those sometimes seen on normal (?) wild specimens. The black tips of the under tail coverts were likewise larger than those on normal specimens. The display plumage on the back and sides of the neck was normal. The general appearance was of a dingy, blackish bird, with black-spotted, pinkish underparts and rather strikingly patterned head; very different from the delicate pastel beauty of a normal Spotted Dove.

In April 1955 this bird, together with its brother, with which it had paired, was placed in an outdoor aviary 20 feet by 18 feet by 8 feet. Immediately prior to this the male had made several attacks on his mate, in the course of which he had removed a good deal of plumage from her head, back and wing coverts. Probably this aggressiveness was due to the thwarting of his (when confined in the cage) desire to get out and go to his selected nest-site on top of the wardrobe, but it may have been a more fundamental perversion of aggressive impulses, such as may occur (Hollander 1945) in Domestic Pigeons *Columba livia* when very closely confined. Care was taken to salvage some of these feathers for comparative purposes. It was soon evident that the new feathers were very different in colour from the old. Possibly the move or some other factor(s) also induced casting of most of the other contour feathers. By mid-July 1956 the erstwhile

"black" female appeared quite normal and on catching and examining her it was apparent that most of the head and body plumage was new, and all these new feathers were normal in colour.

It seems that the temporary melanism of this bird must have been due to some adverse factors operative during the growth and pigmentation of the first adult plumage. An over-fat condition induced by insufficient exercise and a diet rather rich in fats seems likely to have been a predisposing if not a major cause, in view of the normal colouration of the other bird, which had starved prior to commencing to grow its new plumage. The diet alone cannot have been responsible, since it was unchanged when the birds were moved, and other Spotted Doves in my possession, fed in the same manner but kept in outside aviaries, showed no such abnormal colouration. Bullfinches closely confined and fed largely on hemp may become black in colour, as may some other birds and Staples (1948) has discussed in detail the probable chemical and physiological processes involved. Although they may be, and often almost certainly are, causative factors, neither hemp nor close confinement are always needed to induce the (presumably) pathological condition which causes normally coloured feathers to be replaced (when they are plucked or moulted) by melanistic ones. My "black" Spotted Dove received no hemp before or during its moult, though it was getting other fat-rich foods. Of a number of Ruddy Ground Doves *Gallicolumba talpacoti* kept in a large aviary in a zoological garden, many (but not all) began to replace lost feathers with abnormally blackish ones within a few months, and within about a year some of them had become patched and mottled with blackish sepia. I noticed that all the birds that appeared rather poor in health showed such colour change (though some such appeared quite healthy) whereas the few that retained normal colouration *all* appeared very vigorous, lively specimens.

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Little recorded behaviour of the Swallow family

by Mr. H. A. Bilby

Received 3rd September, 1956

In my recent study of the swallows generally and the *Hirundo* genus in particular, I have made some interesting observations on the behaviour of certain closely related races, as follows:

1. *Swallow/grass fire association*

In some races of swallows the habit of visiting grass fires is common and well known, but only rarely or not recorded at all in closely related races.

The Red-throated Rock Martin, *Ptyonoprogne fuligula rufigula*, is so much attracted by grass fires that they will travel many miles to visit such an occurrence; often flying far out over the plains from their normal habitat of hills and crags, etc.; the Ceylon Red-rumped Swallow, *Hirundo daurica hyperythra*, is another swallow that has acquired this habit to such an extent that even the smallest grass or smudge fire it sufficient to attract

any that might be near-by. Two other swallows that regularly visit these fires are the South African Cliff Swallow, *Petrochelidon spilodera*, and the Brown-throated Sand Martin, *Riparia paludicola chinensis*.

On the other hand, the Eastern Barn Swallow, *Hirundo rustica gutturalis*, never visits such fires, while the European Swallow, *Hirundo r. rustica*, the European House Martin, *Delichon u. urbica*, and the Nilgiri House Swallow, *Hirundo tahitica domicola*, only rarely visit them.

Referring to the two European species, *urbica* and *rustica*, I have one personal record of the former and a number of records of the latter at grass fires in southern England in recent years.

In Mozambique most burning off is done after the departure of wintering *rustica* (D. W. Lamm) but on the Gold Coast D. W. Lamm quotes R. E. Crabbe as stating that he is reasonably sure that *rustica* visits the fires there.

From the available evidence it seems therefore that this habit is widespread among the swallows but is no doubt overlooked or not recorded.

The main object of this swallow/grass fire association is apparently the easy source of insect food available, due to insects being driven out from cover. I think, however, from my studies of *Hirundo r. rustica* in southern England, that there is another reason, at least on some occasions; this is that the birds are "smoke-bathing" as recorded for a number of other species of birds. On four occasions at grass fires in Cornwall, Wiltshire and Middlesex in 1954 and 1955, I noted swallows leisurely flying backwards and forwards through the smoke and as far as could be seen they were not catching food.

2. *Wing Fluttering*

This is a very interesting occurrence, mainly found in the *Hirundo* or mud-nesting genera of swallows. It is a particularly intriguing habit in the races of *Hirundo rustica*; it is very common in the American race *erythrogastra*, occasionally in the European nominate *rustica* and never recorded in the Eastern race *gutturalis*.

In the cliff swallows, *Petrochelidon*, it is absent in the African form *spilodera*, apparently never recorded from the Indian *fluvicola*, South American *andecola* and the West Indian and South American *fulva*. With the North American *albifrons*, however, it is a very common habit.

With other species it has been recorded from the Purple Martin *Progne subis* and the European House Martin, *Delichon u. urbica*.

This wing fluttering is normally indulged in when the bird alights on wet mud to collect some for nest building purposes. At the mud collection site the bird or birds come in to land on the wet mud and as they settle the wings are partly or fully extended above the back and fluttered gently; this fluttering sometimes on very wet mud, appears to keep the bird from sinking into the mud but more usually this is only a token gesture and does not seem to serve any practical purpose. Wing fluttering occurs singly as well as in large groups of mud gathering birds; while collecting mud the birds are usually very tolerant of the close approach of others of the same or even of different species and their wings are fluttered just the same, on occasions, however, some of the birds appear to move too near to each other and a fight will start between two or three, quickly spreading to the surrounding birds, after a short while all the birds will suddenly take wing, their differences forgotten.

This wing fluttering has also been observed in *urbica* and *rustica* in southern England when feeding over water, on a few occasions when they have been feeding on insects floating on streams and/or ponds; this is not a common occurrence but is fairly regularly seen. It has also happened on those rare times that these species have been seen feeding on insects and I believe caterpillars on elm and oak trees. When this has been noted they have alighted on a branch or twig and balanced there, their wings stretched and fluttering, and delicately picking at the base and under-side of the nearby leaves, I have watched this feeding behaviour at 20–30 yards range on three occasions with 16x glasses and each time it appeared that small green caterpillars were being taken, part of the time at least.

Another time that I have observed wing fluttering is when these two species come to the ground to feed, a fairly common occurrence in some areas; in my experience ground feeding rarely occurs anywhere except on sand, mud or gravel.

At low tide on the exposed mud of the rivers near Torpoint, Cornwall, I have watched swallows coming down to take unidentified prey from the surface of the mud. On the coast nearby and at other beaches in south and north Cornwall I have seen *rustica* and *urbica* coming down on to the sand and seaweed at high water mark to collect food, amongst a number of species of insects, etc., identified from these beaches, the most common were the sand-hopper (*Talitris locusta*) and a fly (*Coelopa fridiga*), both of which were identified when taken from the bill of a swallow accidentally killed by a car on a nearby road.

In south-west Middlesex there are very many areas, some of them large, of gravel; on some of these I have seen *rustica* and *urbica* coming down to feed on the gravel. So far the prey is unidentified from these gravel areas.

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The names of the Mascarene Olive White-eyes

by Mr. R. E. Moreau

Received 6th September 1956

In *Syst. Av. Aeth.* 2 (1930), p. 680, Sclater used the name *Zosterops curvirostris curvirostris* Blyth for the Mauritius Olive White-eye, remarking in a footnote "*Zosterops chloronota* auct., nec Vieill., is a synonym"; and for the Réunion subspecies he used *Z.c.haesitatus* Blyth, with a footnote

"*Zosterops clivacea* auct., nec Linn., is a synonym". It does not appear that Sclater published the reasons that caused him to reject the original names of Vieillot and Linnaeus respectively and his action seems to have been incorrect.

The first appearance of the Vieillot name is in the form "*Dicaeum chloronothos* Vieill." in *Nouv. Dict. Hist. Nat.* 9 (1817), p. 408, explicitly based on pl. 28 in *Oiseaux Dorés*, vol. 2 (Audebert & Vieillot 1802) and without definite locality. Both this coloured figure and the accompanying description fit the Mauritius bird, and its difference from the Réunion bird is specified.

Hartlaub (*Orn. Beitr. Fauna Madagascars* (Bremen, 1851, p. 41). introduces difficulties. He gives a description of *Z. chloronotos* Vieillot based, as he says, on *Certhia chloronotos* Vieillot, *Ois. Dor.* pl. 28 (which is a misrepresentation, since no binomial is given in the latter reference). He adds that the description is taken from a specimen in the Bremen Museum from Bourbon, but this was presumably by himself (cf. *Ibis* 1861, p. 359), not by Vieillot; and he asserts that the bird occurs also in Mauritius and Madagascar. E. Newton (*Ibis* 1861, p. 272) uses *Z. chloronotus* [*sic*] for the Mauritius bird without comment, giving the Hartlaub 1861 reference but not definitely citing an author of the name. Schlegel and Pollen (*Recherches sur la faune de Madagascar et de ses dépendances* 2, Leyden) remark that *Z. chloronotus* Hartlaub but not *Certhia chloronotus* of Vieillot is the species of Mauritius.

Sharpe (*Cat. Birds Brit. Mus.*) uses the name *Z. chloronota* Vieillot for the Mauritius bird, citing the other names quoted above, with the addition of *Z. curvirostris* Swainson, as synonyms.

Turning now to the Réunion Olive White-eye: Linnaeus (*Syst. Nat.*(1766), p. 185) referred to Brisson's (*Orn.* 3, p. 625) description of *Certhia Madagascariensis olivacea*, which is a good one of the Réunion bird, and printed a brief extract of it under the name *C. olivacea* "hab. Madagascar". Brisson's list shows that the bird he was describing had come to him from Réunion though he says that it had been introduced there from Madagascar.

Hartlaub again made unnecessary complications. In his list of Madagascar birds in *J. Orn.* 8 (1860), p. 95, he included "Z.(?) *olivacea*", citing "*Certhia madagascariensis olivacea* Briss." and also "*Certhia olivacea L.*" as synonyms. He gave a fuller extract of Brisson's description than had Linnaeus and added "Mir unbekannt. Ob wirklich ein Zosterops."

The following year in *Orn. Beitr.* Hartlaub reprinted what he had said in *J. Orn.* 1860 under *Z.*(?) *olivacea* (L.), but added as a different species *Z. haesitata* for the Réunion bird, which he proceeded to describe about as adequately as Brisson had. In a list of "African species of *Zosterops*" in *Ibis* 1861, pp. 357–361, nominally by Heuglin, but "translated and edited" by Hartlaub, "*Z. haesitata* Hartl." is used for the Réunion bird and *Z. olivacea* (Linn.) is nowhere mentioned.

Sharpe (*Cat. Birds Brit. Mus.*) uses the Linnaean name *olivacea* for the Réunion bird, treating *haesitata* Hartlaub as a synonym.

Conclusion: It appears that the Réunion Olive White-eye should be known as *Zosterops olivacea olivacea* (L.), 1767, and the Mauritius bird as *Z.o.chloronothos* (Vieillot), 1817.

Capt. C. H. B. Grant, to whom I am much indebted for going into this matter with me, agrees with this conclusion.

On the Type Locality of *Pinarornis plumosus* Sharpe

by Mr. Michael P. Stuart Irwin

Received 12th June, 1956

Since its original description by Sharpe, in which the type locality of *Pinarornis plumosus* was given as the Victoria Falls on the Zambesi River, this has been subsequently adhered to.

There is evidence, however, that the type could not have come from thence. White and Winterbottom, *A Check List of the Birds of Northern Rhodesia* 1949, p. 80, cast some doubt as to its occurrence there where it was said to frequent the gorges, but without any recent records from thence, and it has since become evident that some error had indeed been made in the original designation.

The habitat of *P. plumosus* is granite boulder country where it is well wooded, never occurring on rock or cliff faces, which renders the terrain of the type locality unsuitable. Moreover, in Southern Rhodesia, no records of its occurrence are known further west than the Matopos and in Northern Rhodesia it is not known from anywhere near the type locality.

In reply to an enquiry regarding the origin of the type, Mr. J. D. Macdonald (*in litt.*) informs me that it was one of seven specimens obtained by the British Museum (Natural History) in 1876, having been purchased from a London dealer by the name of Cutter. None of these skins carried an original collector's label; quoting Sharpe in his *History of the Collections*, 1906, and therein referring to these specimens in a note under Cutter's name states: "The birds from the Zambesi must, I think, have been collected by Dr. Bradshaw," and under Bradshaw's name is the remark: "Unfortunately the collection was never labelled, and was sold as from the Zambesi River. Dr. Bradshaw, however, told me (Sharpe) that scarcely any specimens were obtained on the river itself and that his series of birds was almost without exception obtained in the Makalaka country."

The Makalaka country, or Makalakaland, apparently had a rather ill-defined meaning and was geographically to be interpreted somewhat elastically, as explained in the footnote, p. 206, of *The Matabele Mission of J. S. and E. Moffat*, Oppenheimer Series II, 1945. In contemporary maps it covers much of what is now the south and south-western portion of Southern Rhodesia.

Dr. Bradshaw appears to have travelled widely in this and contiguous areas as far west as the Chobe, being for some time in the employ of Westbeech, a trader at Pandamatenga. Details of his travels, with those of Westbeech and others, are to be found in E. G. Tabler's *The Far Interior*, 1955, and in Maps 2A and 2B of that work are given contemporary wagon routes; these among others, show several through Makalakaland from Shoshong and Tati to Bulawayo and north-west to Pandamatenga. One of these routes skirts the southern outliers of the Matopos formation and this route is also clearly shown in the map in Holub and Pelzeln's *Beiträge zur Ornithologie Sudafrikas*, 1882, and in that accompanying Oate's *Matabeleland and the Victoria Falls*, 2nd edit. 1889. Bradshaw undoubtedly traversed this route, which was on the borders of the Makalaka country, and indeed had met both Dr. Holub and Oates on his journeys.

It was in all probability from thence, the southern fringe of the Matopos, that the type of *P. plumosus* must have originally come. It is therefore thought desirable to change the type locality accordingly to the Matopos Hills, Matabeleland.

In preparing this note my thanks are also due to Mr. C. W. Benson; Mr. V. S. Forbes of Rhodes University, Grahamstown, for helping with the literature; and to the Central African Archives, Salisbury, for allowing me access to their library.

On the application of the name *Zosterops rendovae* Tristram, 1882

By Mr. I. C. J. Galbraith

Received 19th May, 1956

Recently Mees (1955) has given what at first sight seem to be valid, though legalistic, arguments in favour of transferring the name *Zosterops rendovae* Tristram from one species of Solomon Islands white-eye to another. Such a change would cause quite unnecessary confusion, and would be contrary to the spirit of the Principle of Conservation adopted by the Fourteenth International Congress of Zoology (Copenhagen Decisions 1953, 25). It seemed at one time that an application to the International Commission on Zoological Nomenclature, inviting them to use their plenary powers in preventing the transfer, would be necessary; but it now appears that the action proposed by Mees is not in fact in accordance with the International Rules. If this interpretation of the situation is correct, only the following exposition of the facts is necessary. I am greatly indebted to Heer G. F. Mees of the Rijksmuseum van Natuurlijke Historie, Leiden, for memoranda on the literature and much helpful correspondence; to Professor Ernst Mayr of the Museum of Comparative Zoölogy, Harvard, for invaluable advice; to Dr. Allen Keast of the Australian Museum, Sydney, for information on the type of *Tephras olivaceus* Ramsay; to Mr. R. Wagstaffe of the City of Liverpool Public Museums, for information on the lost type of *Z.rendovae*; to Mr. R. E. Moreau of the Edward Grey Institute, Oxford, for information on *Certhia olivacea* Linné; and to Mr. H. O. Ricketts, of the British Museum (Natural History), for preparing the final drawing of Table I.

A single species of *Zosterops* is found on each of the islands San Cristobal and Rendova, in the British Solomon Islands Protectorate. These two species are quite distinct, and not closely related to one another. Several authors have been led by the specific name *ugiensis* published by Ramsay (1882) to attribute a species of *Zosterops* to the island of Ugi, though neither Ramsay nor any other author has specifically recorded specimens from there. Ugi is a small island near San Cristobal, from which its avifauna is almost exclusively derived. The San Cristobal *Zosterops* is rare in the lowlands, if not entirely confined to the ridges of that island (Cain & Galbraith, 1956, 292), and is not likely to be found on Ugi.

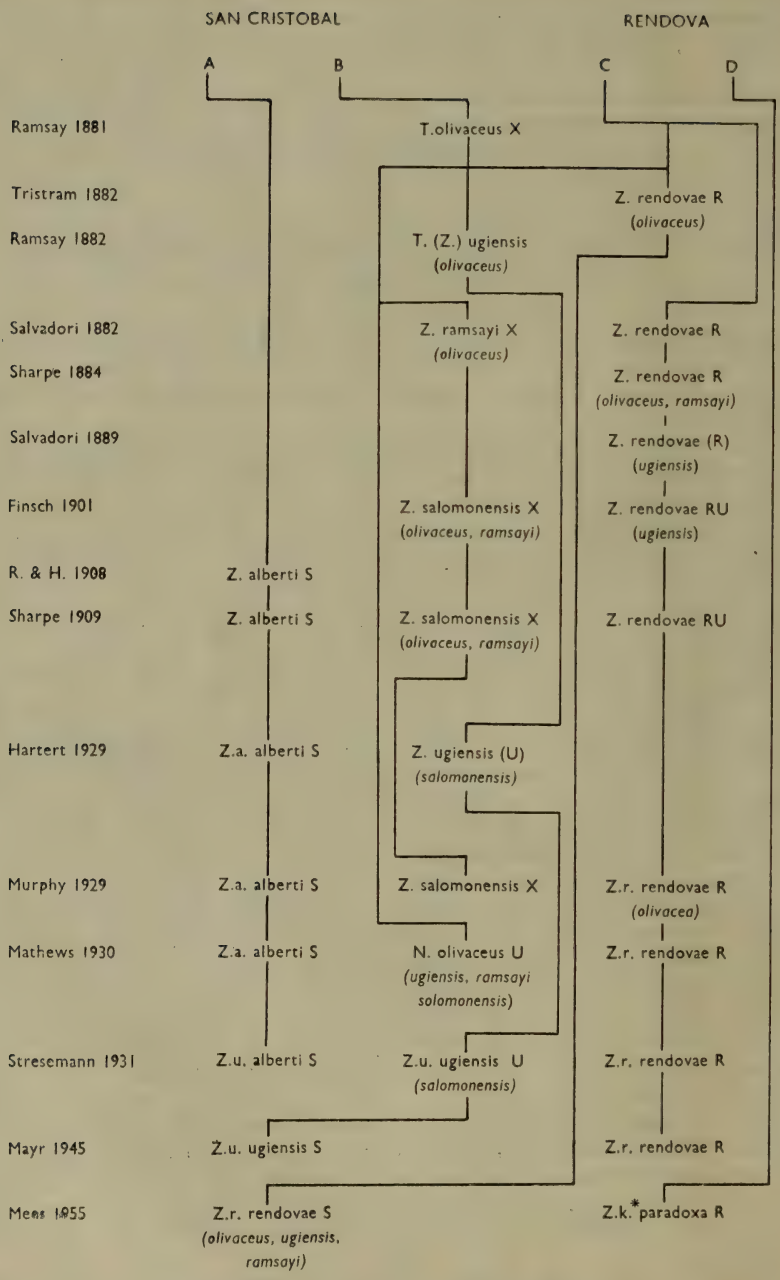
Thus the biological situation is quite simple, but unfortunately the nomenclature is most confused. Ramsay (1881, 180), publishing on birds from the Solomon Islands, named as *Tephras olivaceus* a single specimen

without more precise locality, collected by Lieut. G. E. Richards, R.N. Apparently no subsequent author has examined the unique type in the Australian Museum. Dr. Keast has compared it with a specimen of *Zosterops* collected on San Cristobal by myself, with which it agrees in all respects, except in lacking any trace of the latter's yellow carotenoid pigment, and in having the underparts soiled. Mayr (*in litt.*) is evidently correct in supposing it to be a specimen from San Cristobal, skinned from spirit. Several of the specimens recorded by Ramsay (belonging to subspecies now known as *Coracina tenuirostris salomonis* (Tristram), *C. lineata makirae* Mayr, *Rhipidura rufifrons russata* Tristram, *Pachycephala pectoralis christophori* Tristram, and *Myzomela nigrita tristrami* Ramsay) probably came from San Cristobal, though the *Pachycephala* was said to be from Ugi (see Cain & Galbraith 1956, 104). The type of *Monarcha richardsii* (Ramsay) was also said to be from Ugi, although this species is now known to be confined to the Central Solomons group to which Rendova belongs. Ramsay's locality records are notoriously inaccurate (Mayr 1933, 551).

Lieut. Richards also collected, on Rendova, a single specimen which Tristram (January 1882, 135) mis-identified as Ramsay's *Tephras olivaceus*. Tristram recognized it to be a *Zosterops*, and pointed out that *Certhia olivacea* Linné (1767, 185) had been placed in that genus by Hartlaub (1860, 95). (Linné's was the first valid publication of the non-binomial *Certhia madagascariensis olivacea* of Brisson (1760, 625), which seems despite Sclater (1930, 680) to be the bird at present known as *Zosterops curvirostris haesitatus* Hartlaub, of Réunion——Moreau, personal communication). Tristram should either have proposed a substitute name for *T.olivaceus*, or have made his specimen from Rendova the type of a new species. What he did was to erect a composite species, by publishing "*Zosterops rendovae* sp.nov." with a description of his bird, and commenting ". . . I have felt it necessary to substitute another name for this very remarkable species . . .". Thus at its first publication, *Zosterops rendovae* Tristram was expressly stated both to be the name of a new species, and to be a substitute name for *olivaceus*. Tristram's attitude to the question is suggested by the name he chose. It was current practice (followed by Salvadori (1882a, 425) and Finsch (1901, 42) in proposing the names *ramsayi* and *salomonensis* as substitutes for Ramsay's *olivaceus*) to form a substitute name for another author's species either from his patronymic or from the type locality of his specimens. Instead, Tristram used the locality of his own specimen. Whether he regarded *rendovae* as applying to this specimen, rather than to the type of *T.olivaceus*, from the first, he certainly did so by 1889 (212), when he listed the Rendova specimen as the type of *rendovae*.

The type specimen of *Zosterops rendovae* Tristram was purchased with the Tristram Collection by the City of Liverpool Public Museums, and has not been found since the fire which damaged the Museum during the late war. However, it was figured (Tristram 1894, pl. 3, fig. 2), and undoubtedly belonged to the form recorded from Rendova by subsequent authors.

Ramsay (after 29th March, 1882, 28) independently noticed that *olivaceus* was preoccupied in *Zosterops*, and published *Tephras* (*Zosterops*) *ugiensis* as a substitute. He did not comment on the locality of the type.



Caption to this Table on opposite page.

Salvadori (October 1882a, 425) recognized that the descriptions of *rendovae* and *olivaceus* did not agree, and separated them. His action as first reviser, in restricting the application of *rendovae* to Tristram's specimen, was in accordance with the usage of the time. Overlooking *ugiensis*, Salvadori published *Zosterops ramsayi* as a substitute for *olivaceus*.

Sharpe (1884, 188) synonymized *olivaceus* with *rendovae*, while noting that Salvadori considered them to be distinct. Thus he accepted Salvadori's action as first reviser in restricting the application of *rendovae*, though disagreeing on a subjective judgment. He pointed out that *ramsayi* was preoccupied by *Zosterops ramsayi* Masters (1876, 56) of Palm Island, North Queensland.

Salvadori later (1889, 132) followed Sharpe in synonymizing *ugiensis* (which his use of reference numbers here and in 1882b, 546 shows to be *ramsayi*) with *rendovae*. This was a reversal of a subjective judgment, not a disavowal of his own action as first reviser.

However, Finsch (1901, 26 & 42) attempted to follow Salvadori in both courses of action, separating *rendovae* (=*ugiensis*) from *olivaceus*. Thus he placed the objective synonyms *olivaceus* and *ugiensis* under different species. His usage is contrary to the rules of nomenclature and cannot be cited as a repudiation of Salvadori's action. Finsch also proposed *Z.salomonensis* as a substitute for *olivaceus*. Four names were now unequivocally attached to Ramsay's type.

Rothschild & Hartert (1908, 364) published the name *Zosterops alberti* for specimens collected on San Cristobal, without mentioning any other species of *Zosterops*. Between then and 1945, it gradually became clear that only two populations were involved, on San Cristobal and Rendova. This can best be appreciated from Table I, which shows how the seven names available for these two populations are related to four type specimens, and how they have been applied. Sharpe (1909, 9, 18 & 632) now followed Salvadori's original action, in separating *rendovae* from Ramsay's type (which, neglecting *ugiensis*, he called *salomonensis*). For no evident reason he gave both Rendova and Ugi as localities for

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TABLE I

Illustrating the relationship between two populations, four type specimens and seven names of *Zosterops* on San Cristobal and Rendova Islands in the Solomons, and the application of these names by various authors (quoted synonyms in parentheses).

1. TYPES
   - A. Type of *alberti*. Yanuta (San Cristobal), Meek, 25 April, 1908. Tring Museum no. 4078.
   - B. Type of *olivaceus*. Solomon Islands, Richards. Australian Museum no. A 9798.
   - C. Type of *rendovae*. Rendova, Richards, 15 August, 1880. Tristram Collection, City of Liverpool Public Museums.
   - D. Type of *paradoxa*. Rendova, Meek, 15 February, 1904. British Museum (Natural History) no. 1905.11.25.26.

2. GENERIC NAMES USED
   - N. *Nesozosterops*
   - T. *Tephras*
   - Z. *Zosterops*

3. RANGES QUOTED
   - R. Rendova
   - S. San Cristobal
   - U. Ugi
   - X. Unlocalized within the Solomons

* *kulambangrae* Rothschild & Hartert, 1901.

rendovae, while leaving *salomonensis* unlocalized within the Solomons. This cannot be taken to imply that the two species were still being confused in nomenclature as Mees (*in litt.*) considers. Hartert (1929, 10) considered the possibility that *ugiensis* might be the same as *alberti* of San Cristobal, but was misled by the description (reflecting the discoloration of the type) into thinking that this could not be so. Murphy (1929, 3–4 & 6) formally cited only *alberti* and *rendovae*, and considered *olivacea* (*sic*) to be synonymous with the latter. This does not imply that, repudiating Salvadori's action, he regarded *rendovae* and *olivacea* as objective synonyms based on the same type. However, in mentioning *salomonensis* as a distinct form (possibly a representative of *alberti*) he fell into much the same error as Finsch. Mathews (1930, 702, 708 & 713) improperly resurrected the name *olivaceus* Ramsay (a rejected homonym), which he correctly separated from *rendovae* but did not associate with *alberti*. Stresemann (1931, 224–225) distinguished the supposed *ugiensis* of Ugi only subspecifically from *alberti* of San Cristobal, and Mayr (1945, 272–273) finally synonymized them. Sibley (1951, 92) and Cain & Galbraith (1956, 104 & 291) followed Mayr's nomenclature.

Thus for seventy-three years (1882–1955) the *Zosterops* on Rendova has been universally known as *rendovae* Tristram, although Finsch (1901) and Sharpe (1909) considered it to occur on Ugi also. Murphy (1929) first used *rendovae* for a polytypic species, which Mayr (1945) considered to extend over the whole Central Solomons group.

The name *ugiensis* has had a chequered history. Published in 1882, it was not recognized as a valid name until 1929. However, if *rendovae* should apply to the Rendova bird, *ugiensis* is undoubtedly the oldest valid name for the San Cristobal one. It was first used for the polytypic species found on Bougainville, Guadalcanal and San Cristobal by Stresemann (1931), followed by Mayr (1945) and Cain & Galbraith (1956).

In 1953 the Fourteenth International Congress of Zoology approved the resolutions of the Colloquium on Zoological Nomenclature, which thus became morally binding on zoologists, although they have not yet come formally into operation pending the publication of the revised International Rules (Copenhagen 1953, 103–104). Two aspects of these resolutions are relevant here. A preamble to the Rules was adopted (*op. cit.*, 22) emphasizing stability and universality as the primary objects of the Rules. The Principle of Conservation giving automatic effect to this (*op. cit.*, 25–26 & 119–122) is concerned with the case of an established name threatened by a long-neglected senior synonym, and is not directly relevant. However, the International Commission were instructed (*op. cit.*, 22–23) to use their plenary powers "for the purpose of preventing confusion and promoting a stable and universally accepted nomenclature."

Directly relevant to the present case is the provision, adopted for insertion into Article 31 of the Rules, that "Where a specific name, when first published, is specifically stated to be a substitute (e.g. by the use of such expressions as 'nom.nov.' or 'nom.mut.') for a previously published name but is at the same time applied to particular specimens, the species to which the new name applies is in all circumstances that to which the previously published name is applicable." (op. cit., 75–76). Mees (1955) invoked this decision in order to reverse Salvadori's action as first reviser,

and to transfer the name *Zosterops rendovae* Tristram (considered by him as an objective synonym of *Tephras olivaceus* Ramsay) from the Rendova form, to which it had been applied for seventy-three years, to a quite different species in another part of the Solomons. This action would leave the Rendova population without a valid name, which Mees supplied by describing a new subspecies *Zosterops kulambangrae paradoxa*. (*Zosterops kulambangrae* Rothschild & Hartert (1901, 181) is the oldest available name for the Central Solomons species if *rendovae* is transferred).

This transfer of a name would have deplorable consequences. Far from being irrelevant to nomenclatural discussion (Mees *in litt.*), Mayr's (1945) pioneer field-guide to the south-west Pacific has equal status with any other validly published work, and it is especially important that the nomenclature there adopted should not be capriciously overthrown. Several authors have already followed this work in systematic presentation, of whom Sibley (1951) and Cain & Galbraith (1956) mention the *Zosterops* of Rendova and San Cristobal by the names *rendovae* and *ugiensis* respectively. Mayr's book will be the standard work for field students for many years, and it would be exceedingly unfortunate if they and the museum systematists were to use the name *Zosterops rendovae* for two quite different species. Although the appropriateness of a name is irrelevant to its validity, misleading geographical apellations are obviously undesirable. Mees (*in litt.*) considers *ugiensis* no less than *rendovae* to be inappropriate to a form found only on San Cristobal: but while Ugi belongs avifaunally to the San Cristobal group of islands, Rendova is one of the remote and very distinct Central Solomons group.

Supposing that the name *Zosterops rendovae* Tristram ought strictly to refer to the San Cristobal form, expediency and the spirit of the Copenhagen decisions demand that it should not be used for it. The International Commission should be requested to use their plenary powers, either to place *rendovae* and *ugiensis* on the Official List of Nomina Conservanda and to designate Rendova Island as the type locality of the former, or to place *rendovae* on the Official Index of Nomina Rejecta. But in fact the transfer of names proposed by Mees is contrary to the International Rules.

In the first place, the Copenhagen decision of 1953, even when it comes formally into operation, should not be applied retrospectively to reverse the decision made by Salvadori in 1882, in accordance with the usage of his time, and tacitly accepted by all those subsequent authors whose treatment of the synonymy is legitimate.

In the second place, this case is not one to which the provision which is to be inserted in Article 31 of the Rules can automatically be applied. *Zosterops rendovae* at its first publication was not simply "applied to certain specimens", but was specifically stated to be the name of a new species, for which its author later designated a type (Tristram 1889). The statement that the name was a substitute was made informally and on a subsequent line, and there is no reason under the Rules to give it greater weight.

The action proposed by Mees (1955), transferring the name *Zosterops rendovae* Tristram to the form at present known as *Zosterops ugiensis* (Ramsay), is thus entirely unjustifiable, and the nomenclature adopted by Mayr (1945) may stand. *Zosterops kulambangrae paradoxa* Mees is a synonym of *rendovae*.

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DINNERS AND MEETINGS FOR 1957

15th January, 19th February, 19th March (joint with B.O.U.), 16th April, 21st May, 17th September, 15th October, 19th November, 17th December.

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Contributors who desire free copies of the Bulletin containing their notes should state so on their MS., otherwise these will not be ordered. These will be supplied up to a maximum of fifty.

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Members who make a contribution at a Meeting should hand the MS. to the Editor at that Meeting. As the proofs will be corrected by the Editor, it is essential that the MS. should be correct and either typed or written very clearly with scientific and place names in block letters. The first mention of a scientific name should be spelt out in full, i.e., genus, specific name, racial name (if any), and author. Any further mention of the same name need only have the initial letter of the genus and no further mention of the author.

If no MS. is handed to the Editor at the Meeting, a note will be inserted mentioning the contribution.

BLACK AND WHITE ILLUSTRATIONS

The Committee have decided that in future the Club will pay for a reasonable number of black and white blocks at the discretion of the Editor. If the contributor wishes to have the blocks to keep for his own use afterwards, the Club will not charge for them, as has been done in the past.

Communications are not restricted to members of the British Ornithologists' Club, and contributions up to 1,500 words on taxonomy and related subjects will be considered from all who care to send them to The Editor, Dr. J. G. Harrison, "Merriewood", St. Botolph's Road, Sevenoaks, Kent.

Communications relating to other matters should be addressed to the Hon. Secretary, N. J. P. Wadley, Esq., 14 Elm Place, London, S.W.7.

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5 FEB 1957

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The five hundred and fifty-third meeting was held at the Rembrandt Hotel on Tuesday, 15th January, 1957, following a dinner at 6.30 p.m.

Chairman: CAPTAIN C. R. S. PITMAN

Members: 34; Guests: 5; Total: 39.

The Chairman expressed the congratulations of the Club to Colonel R. Meinertzhagen on his award of the C.B.E. in the New Year's Honours "for services to Ornithology". Colonel Meinertzhagen in replying said he thought it was the first time that such an award had been made to an amateur for his hobby.

Nature Reserves and Bird Protection

Mr. E. M. Nicholson, Director General of Nature Conservancy gave a talk on this subject, illustrated with lantern slides in colour showing views of the Reserves so far established throughout Britain by the Conservancy. A paper by Mr. Nicholson will be published in the March *Bulletin*.

Note on the immature plumages of *Oenanthe monacha* (Temminck)

By MR. DEREK GOODWIN

Received 30th August, 1956

The immature plumages of the Hooded Wheatear, *Oenanthe monacha*, do not appear to have been described. They are not, for example, recorded by Praed and Grant, 1953, or by Meinertzhagen, 1954. The species is rather rare in collections, but of the thirty-eight in the British Museum (Nat. Hist.) three are juveniles, two of them being in the post-juvenile moult.

A juvenile female, taken on 22nd June near Wadi Tathlith, Arabia, (Reg. No. 1937:4:17:335) is slightly paler in colour than the adult female, being of a general pale greyish-fawn, shading to buffish-white on the rump, belly and upper and under tail coverts. The wings and tail are as in the adult. A second female (Reg. No. 1937:4:17:333), taken on 10th August at Shabwa, has nearly completed its first moult but still retains a few juvenile feathers on the neck and mantle. A young male (Reg. No. 1937:4:17:330), taken on 4th August north-east of Jauf, is also in its first moult but retains many juvenile feathers on the neck, upper part of the

breast and mantle and a very few on its wing coverts. They are similar in colour to those of the juvenile female and it seems, therefore, that the sexes are alike in their first plumage.

As is usual, the juvenile rectrices, primaries, primary coverts and secondaries are not cast at the first moult and first year males can be distinguished at a glance from adults by their having greyish sepia (or, when much faded, pale brownish) instead of black primaries and secondaries. The sepia markings on the outer tail feathers of first-year males are more extensive than those of most adults. The latter, however, vary a great deal in this character, although whether these differences are due to age or to individual variation it is not yet possible to say.

In fresh plumage all ages and both sexes have the ends and outer webs of the wing feathers margined with pale fawn, this being most pronounced on the secondaries. Freshly moulted males, both adult and first-year birds, have the crown and underparts greyish-fawn and the rump considerably suffused with this colour: a process of wear and bleaching, or subtractive moult, being evidently responsible for the pure white crown and underparts of the male in spring and summer.

Refrences
Meinertzhagen, R. (1954), *Birds of Arabia*, p. 254.
Praed, C. W. M., and Grant, C. H. B. (1953), *African Handbook of Birds*, Ser. 1, Vol. 2, p. 267.

Outermost rectrice of a first year ♂ (extreme left) and 4 adult ♂♂ of *Oenanthe monacha*

The Development of Skull Pneumatisation in the Wood Pigeon

by Dr. Jeffery G. Harrison

Received 20th May, 1956

Introduction

The study of skull pneumatisation in birds is as yet still in its earliest stages, but the wide variations between different groups of birds indicate that a great deal remains to be learnt in this new field of comparative functional anatomy.

The present study is the first of its kind on any one species and is based on findings in the Wood Pigeon, *Columba palumbus palumbus* Linnaeus. This species was selected for various reasons: it takes longer than most

species to reach full pneumatisation; it is an agricultural pest, splendid to eat and a first-class sporting bird, so that sufficient numbers were likely to be available throughout the year. However, owing to the Wood Pigeon's habit of nesting almost all the year round, the results are rather more difficult to interpret than was expected.

Four authors [1] [2] [3] have pointed out that there are certain species which never reach complete pneumatisation, retaining non-aerated areas in the skull, which on account of their translucency have been termed "windows." In our last paper, [4] Dr. David L. Harrison and I pointed out that we thought it unwise, in the present state of our knowledge, to use the presence of "windows" in the adult skull as arguments in problems of classification, on the assumption that they are adaptations for flight or for diving, and are therefore likely to have evolved in response to these habits in otherwise unrelated species. We felt that the method of pneumatisation might be more helpful and this paper is the first investigation into this aspect of the problem. For the time being it would seem unwise to attempt to define the stages about to be described by any special terminology, until other species have been examined and compared.

The Method of Pneumatisation

The results of the dissections have shown that there is a definite method involved, with one or two minor variations. The drawings of the skull vaults as seen from above summarize these findings diagrammatically. It has been found unnecessary to draw the base of the skull, as this is one of the first parts to become pneumatised, air cells quickly invading the bone as ingrowths from the two auditory capsules. The fact that there is any method must surely indicate that an underlying physiological principle exists, as must the relatively small numbers of skulls (14 out of 792) showing asymmetrical stages of pneumatisation, when comparing the right and the left sides.

The diagram traces the development of pneumatisation within the skull, the gradual invasion of the air cells in the bone being represented by the dotted portions of the skull drawings. Sutures and fontanelles have been shown and the plain areas represent that portion of the skull without air, the so-called "windows." The diagram sets out the different variations involved; skulls A to M show one method, with skulls 1 to 7 as alternatives of C to H and 9 to 10 as alternatives of J to L. The figures shown in the table opposite give the numbers of each stage examined per month, the figures being further divided into adults and immatures, where this has been possible on plumage from July to December.

The initial stages of pneumatisation develop rapidly. On hatching, the skull is airless (A), but marked vascular engorgment can be seen within the bones, which are unfused, the anterior, posterior and lateral fontanelles being present. The next skull (B) shows the first stages of pneumatisation. Air cells from each auditory capsule have already grown inwards to invade the whole of the occipital and parietal bones. (Intermediate stages between A and B were unfortunately not obtained, but have been seen in other species.) The triangular area anteriorly shows the first stage of air cell ingrowth from the nasal area. This spreads postero-laterally along the upper edge of the orbits (C) and two tongues next develop in the frontal bones parallel to the sagital suture (D). This is followed by a

THE PROCESS OF SKULL PNEUMATISATION IN THE WOOD PIGEON

STAGES A→M = METHOD I

STAGES 1→5= ALTERNATIVE TO C→G

STAGES 1→7= ALTERNATIVE TO C→H

STAGE 8 = ALTERNATIVE TO 3

STAGES 9→10 = ALTERNATIVE TO J→L

	A	B	C	D	E	F	G	H	I	J	K	L	M	1	2	3	4	5	6	7	8	9	10	Total*
JANUARY	—	—	—	—	—	—	1	10	—	4	—	1	4	—	—	—	—	2	2	—	—	—	—	24
FEBRUARY	—	—	—	—	—	—	3	21	—	11	—	7	3	—	—	—	3	—	1	2	—	—	—	52
MARCH	—	—	—	—	—	—	11	16	—	5	—	7	2	—	—	—	—	3	—	9	—	1	—	55
APRIL	—	—	—	—	—	—	—	26	1	8	1	2	2	—	—	—	—	2	3	—	—	—	—	47
MAY	—	—	—	—	—	—	2	6	—	11	—	4	4	—	—	—	—	1	—	—	—	—	—	28
JUNE	—	—	—	—	—	—	1	6	—	7	—	6	—	—	—	—	1	—	1	—	—	—	—	22
JULY *adult*	—	—	—	—	—	—	11	38	—	12	—	13	5	—	—	—	4	—	—	—	—	—	—	88
JULY *immature*	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
AUGUST *adult*	—	—	—	—	—	—	—	32	—	59	—	17	16	—	—	—	4	—	2	1	—	—	—	143
AUGUST *immature*	—	—	1	—	3	—	—	—	1	—	—	—	—	2	1	—	—	—	—	—	—	—	—	
SEPTEMBER *adult*	—	—	—	—	—	—	—	35	—	38	—	15	12	—	—	—	18	—	1	—	—	—	1	132
SEPTEMBER *immature*	—	1	—	—	3	—	—	2	—	—	—	2	—	—	1	—	3	—	—	—	—	—	—	
OCTOBER *adult*	—	—	—	—	—	—	—	10	—	14	—	6	5	—	—	—	5	—	4	—	—	—	1	95
OCTOBER *immature*	—	—	—	1	—	—	—	13	—	1	—	1	—	—	—	4	10	8	5	1	2	—	—	
NOVEMBER *adult*	—	—	—	—	—	—	—	3	—	3	—	6	1	—	—	—	—	—	—	—	—	—	—	54
NOVEMBER *immature*	—	—	—	—	3	3	2	13	—	2	—	—	2	—	—	—	12	2	3	—	—	—	—	
DECEMBER *adult*	—	—	—	—	—	—	3	10	—	8	—	8	4	—	—	—	—	3	—	—	—	—	—	52
DECEMBER *immature*	—	—	—	—	—	—	1	7	—	1	—	1	—	—	1	—	—	1	—	—	—	—	1	
TOTAL	1	1	1	2	9	3	35	248	2	184	1	96	60	2	3	4	60	22	22	13	2	1	3	792
IMMATURES	1	1	1	2	9	3	3	35	1	4	—	4	2	2	3	4	25	11	8	1	2	—	1	123

* This includes 14 asymmetrical and 3 unclassified skulls.

second pair of tongues lateral to the first two (F). Skulls 2 and 3 show the stages whereby the temporal bones and lateral area of the frontals become pneumatised by ingrowths spreading laterally from the lateral sides of the parietals.

In all these stages apart from A, the bird has been well grown and flying. It will be noticed that the sutures and fontanelles are only gradually fusing and closing during this time. Whether the bird can fly as strongly and undertake such speedy evolutions as an adult with a fully fused and pneumatised skull is as yet an unanswered, but most interesting problem.

Skulls 3 and 8 show the development of pneumatisation along the line of the obliterated sagital suture; in the former it develops posteriorly, in the latter anteriorly. All methods converge to stage H, which with 248 examples (30.7 per cent) is the most numerous of all the stages examined. The non-aerated portion of the frontal bones is now reduced to two small oblong areas lying parallel to the mid-line and two small circular areas lateral to the former, already partly subdivided by a small ingrowth of air cells anteriorly.

The remaining stages show the final elimination of these four "windows" within the frontal bones. The two lateral ones most frequently disappear first, leaving the two medial oblong areas, which gradually shrink until they are also obliterated. In a few cases the reverse is the case. The skull M shows the final fully pneumatised skull, represented in this series by 60 examples or 7.5 per cent.

The Time Factor

Unfortunately it has not been found possible to assess with any accuracy how long it takes for the full process of skull pneumatisation to take place. The picture is confused because of the wide variation in the breeding season. However, in the series of 123 immatures, where these were recognizable by plumage, two had already completed the process by November (12th and 13th), so that these two birds were probably no more than six months old. However, it seems highly likely that others take considerably longer than this, to judge from the large numbers in full plumage found at the stages H, J and L between March and August. Assuming that the Wood Pigeon takes 6 to 18 months to reach full pneumatisation, the figure of 7.5 per cent in this state gives an indication of the high mortality rate during this time.

X-ray studies of Wood Pigeon in captivity do not appear to offer a satisfactory alternative method of study, as it is not possible to detect the small residual "windows" by this means.

Comparison with other species

Preliminary investigations on the Stock Dove *Columba oenas* Linnaeus, the Rock Dove *Columba livia* Gmelin and feral tame pigeon originating from Rock Dove stock indicate that they follow precisely the same method. The Turtle Dove, *Streptopelia turtur* (Linnaeus) appears to be slightly different.

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Dr. James M. Harrison and Dr. David L. Harrison have both read and made helpful suggestions for this paper and have shot many of the

specimens. I am also most grateful to the others who have taken the trouble to save me their pigeon heads or who have allowed us to shoot on their land, particularly Mr. A. Brooks, Sir Philip Manson-Bahr, Mr. T. C. Gregory, Mrs. P. F. Harrison, Messrs. D. B. and R. Jones, G. Pattinson, D. C. G., R. G. and A. Raikes, J. G. Tatham, Dr. W. H. Inman and J. P. M. Wardell.

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[1] Mr. C. M. N. White, "Skull Ossification in certain Passeriformes," *The Ibis*, vol. 90, p. 329, 1948.

[2] Dr. Jeffery G. Harrison and Mr. David L. Harrison, "Some Developmental Peculiarities in the Skulls of Birds and Bats." *Bull. B.O.C.*, vol. 69, pp. 61–70, 1949.

[3] Dr. James P. Chapin, "Pneumatisation of the Skull in Birds." *The Ibis*, vol. 91, p. 691, 1949.

[4] Dr. Jeffery G. Harrison and Dr. David L. Harrison, "The Development of the Skull in the Cream-coloured Courser, Stone Curlew and Houbara Bustard." *Bull. B.O.C.*, vol. 75, pp. 61–63, 1955.

Nest of Mirafra albicauda rukwensis White

by Mr. D. Foster Vesey-FitzGerald

Received 14*th August*, 1956

White (1956) described this new race from specimens collected by the writer. Particular interest is attached to the discovery of this lark in the Rukwa valley, because although there are vast expanses of grassland there, Vesey-FitzGerald (1955), species of Alaudidae are remarkably scarce. Indeed the only other species of lark collected is *Eremopterix leucopareia*. Nevertheless *M.a.rukwensis* is very abundant on the grasslands surrounding Lake Rukwa. It chiefly favours the shorter grasses of the lake shore plains where *Diplachne fusca* and *Sporobolus spicatus* predominate. It is however common on the perimeter grasslands, especially where *Sporobolus marginatus* is abundant. It is not absent from the taller stands of flood-plain grassland dominated by *Echinochloa pyramidalis*, though here the birds are mainly associated with the enclosed "lawns" of the shorter *Cynodon dactylon* and *Cyperus longus*.

The bird is resident on the plains throughout the year; it has not been observed to frequent the surrounding woodlands. Nests were found in April and May, that is at the end of the rains. *M.a.rukwensis* might aptly be designated as the original "Mud Lark," since it favours the damp or shallowly flooded areas of sticky black illuvial soils for nesting. Sites chosen are patches of bare ground such as the sides of foot paths, in areas trampled bare by game, or natural bare patches which often occur in the transition zones between different grass communities. The nest is usually placed beside a small grass tussock, those seen were quite exposed and with no overhead shade.

A saucer-shaped depression, diameter 7 cm., is pressed in the muddy soil. This is rather thickly lined with shreds of dry grass, the diameter of the finished nest being about 6 cm. The grass is somewhat pressed into the mud, and the mud is somewhat worked up around the grass rim of the nest.

The clutch comprises two eggs. These are off-white coloured and plentifully freckled all over with varying shades of brown. In some eggs there may be a concentration of small blotches towards the big end. The eggs

apparently vary considerably in shape and size. Three eggs, from three different nests, had the following dimensions: 1.64 x 1.21 cm.; 1.76 x 1.31 cm. and 1.94 x 1.31 cm.

The stomachs of adult birds have been found to contain mostly insect fragments, but a few seeds are also usually present. The birds have not been observed to seek water-holes although for six months of the year there is no surface water available in their habitat. However they spend the heat of the day in the shade of tussocks.

References

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The Races of the Longtail, *Prinia polychroa* (Temminck), with the description of a new race from Southern Annam

by Mr. H. G. Deignan

Received 11th September, 1956

Stuart Baker long ago pointed out (*Fauna of British India, Birds*, ed. 2, 2: 522, 1924) that Annam specimens of what he conceived to be "*Suya crinigera cooki*" were darker and much more rufescent than the true *cooki* of Burma. In my earlier study of the genus *Prinia* in south-eastern Asia (*Smiths.Misc.Coll.* 103 (3): 9–11, 1st Sept., 1942), submerging the genus *Suya* in *Prinia*, and placing *cooki* and numerous other forms in the species *polychroa*, I followed Baker in using the name *cooki* for Annam birds. Material since collected in southern Annam by Joseph F. Rock now shows that the characters mentioned by Baker are consistent in series and that the population needs a name, which may be

Prinia polychroa rocki, subsp. nov.

Type: U.S. Nat. Mus. No. 361149, adult male in fresh winter plumage, collected at Fimnon (lat. 11° 47′ N., long 108° 24′ E.), southern Annam, in November 1939, by Joseph F. C. Rock (collector's number 1046).

Diagnosis: Whereas *cooki* of central and eastern Thailand, southern Laos, and Cambodia (no topotypical skins available) has, in summer plumage, the under parts dull buff, posteriorly brighter, *rocki* has these parts bright buff, posteriorly suffused with rufescent; similarly, in winter plumage, while *cooki* has the under parts bright buff, posteriorly suffused with rufescent, *rocki* has them rufescent buff, posteriorly a still richer and brighter rufescent, and the upper parts as well much more strongly suffused with rufescent. In short, *cooki* in winter plumage is scarcely separable from *rocki* in summer plumage, although the two are perfectly distinct when the plumages are seasonally compared.

Range: Southern Annam (Lang Bian Plateau at 3,000 feet).

Remarks: In *Bull.Brit.Orn.Club* 42 (264): 53, 3rd Jan., 1922, La Touche named "*Suya crinigera bangsi*" from Mengtsz (lat. 23° 23′ N., long. 103° 27′ E.) and "*Suya crinigera parvirostris*" from Shuitang (lat. 23° 05′ N., long. 103° 40′ E.), places in south-eastern Yunnan. Outram Bangs, discussing the type specimens in his charge (*Bull.Mus.Comp.Zool.* 70 (4):

342, March 1930), recognized both, setting up *parvirostris* as a monotypic species. Since that time, La Touche's names have lapsed into oblivion.

The authorities of the Museum of Comparative Zoology have recently kindly sent me all of the original material of La Touche's two forms, and I find myself compelled to agree that two species are in fact represented amongst them. My own allocation of the two sets of paratypes does not wholly coincide with that of La Touche, as indicated by his identifications written on the labels, and I find that both kinds occur at Mengtsz. Since the type of *parvirostris* is of *criniger*-facies, while that of *bangsi* is of *polychroa*-facies, and absolute sympatry appears at Mengtsz, it is plain that I erred in my previous revision in regarding *polychroa* as conspecific with *criniger*.

Prinia polychroa and *Pr.criniger*, as species, are difficult to discriminate, and one must doubt whether the sympatric forms would be separable in life; skins of the two, however, laid out in series, are readily distinguished, whether compared in winter or summer dress. All populations of *criniger*, in unworn plumage, possess minute dusky tips to the feathers of the cheeks and sides of the throat and breast (even in worn plumage traces of these tend to persist on the cheeks), and have conspicuous striations above, especially on the head and anterior mantle; those of *polychroa*, on the other hand, never have the minute dusky tips (although, in overstuffed skins, the dark bases of the feathers may appear) and above have poorly developed striations, obsolescent on the head, and still more so (or even absent) on the anterior mantle.

Prinia polychroa, a species of notably discontinuous distribution and apparently restricted to Java and the Indo-Chinese countries, can be divided into at least four races:

1. *Prinia polychroa polychroa* (Temminck), 1828.

Upper parts dark greyish brown, under parts creamy buff (summer and winter).

Range: Java.

2. *Prinia polychroa cooki* (Harington), 1913.

Upper parts dark brown, faintly washed with rufescent (summer and winter); under parts dull buff, posteriorly brighter (summer), bright buff, posteriorly suffused with rufescent (winter).

Range: Central Burma; ? Central Thailand (Kamphaeng Phet); ? Eastern Thailand (Loei, Ubon, Nakhon Ratchasima), ? Bas-Laos; ? Cambodia.

3. *Prinia polychroa rocki* Deignan, 1957.

Upper parts dark brown, strongly suffused with rufescent (summer), deep rufescent brown (winter); under parts bright buff, posteriorly suffused with rufescent (summer), bright rufescent buff, posteriorly a still richer and brighter rufescent (winter).

Range: Southern Annam (Lang Bian Plateau).

4. *Prinia polychroa bangsi* (La Touche), 1922.

Upper parts dark brown, strongly suffused with rufescent (summer), bright rufescent brown (winter); under parts dull buff, lightly suffused with rufescent, posteriorly brighter (summer), dull rufescent buff (winter).

Range: South-eastern Yunnan.

The South African races of the Speckled Mousebird *Colius striatus* Gmelin

by Mr. P. A. Clancey

Received 30th July, 1956

Three races of the Speckled Mousebird *Colius striatus* Gmelin are recognized from the South African subcontinent by Vincent, *Check List of the Birds of South Africa*, 1952, p. 47; Roberts, *Birds of South Africa*, 1940, p. 159; and Peters, *Check List of the Birds of the World*, vol. v, 1945, p. 145. The races concerned are *C.s.striatus* Gmelin, 1789: Cape of Good Hope; *C.s.minor* Cabanis, 1876: Natal; and *C.s.rhodesiae* Grant and Mackworth-Praed, 1938: Umtali, eastern Southern Rhodesia. The characters separating these races consist in the main of differences in the amount of black on the throat and in the colouration of the feet, which are dark purplish in *C.s.striatus* and *C.s.minor* and dull pinkish red in *C.s.rhodesiae*.

Through the courtesy of the Directors of the Transvaal Museum, Pretoria, the Natal Museum, Pietermaritzburg, and the Museu Dr. Alvaro de Castro, Lourenço Marques, I have recently been able to assemble a large body of material, the study of which reveals that four nomenclaturally recognizable races of *C.striatus* occur within the confines of the South African subcontinent.

The nominate race of *C.striatus* is confined to the Cape Province and the southern parts of the Orange Free State. It is a race characterized by rather large size and pale colouration, the lower ventral surfaces being usually pale buffish white, and the dark greyish throat is largely obscured by prominent silvery apices to the gular feathers. An intermediate group of populations occurs in Pondoland and adjacent areas, the majority of specimens of which resemble *C.s.striatus* in the throat character but the Natal and Zululand race, *C.s.minor*, in the deep cinnamon wash over the abdominal surfaces.

As I have already pointed out (*vide Durban Museum Novitates*, vol. iv, 13, 1955, p. 201), the race of Natal and Zululand is scarcely smaller than the nominate subspecies, but there are other important and perfectly valid racial characters. As has just been noted, *C.s.minor* has the lower ventral surface strongly washed with cinnamon, while the throat is distinctly blacker, less greyish. Furthermore, the black of the throat is not so obscured by the pallid feather apices, and other less salient though perfectly valid differences are the more purplish grey cast to the breast feathers and slightly darker upper-parts, wings and tail. Most recent authors state that *C.s.minor* ranges from Natal northwards to northern Portuguese East Africa and to southern Nyasaland, but study of the ample material now available to me shows that is not so, and this race appears to be confined to Natal, Zululand and the elevated interior of the Transvaal.

In the low-lying country of north-eastern Zululand, eastern Swaziland, eastern Transvaal "lowveld" and southern Portuguese East Africa occur populations the birds of which resemble *C.s.minor* in the nigrescent

throat, but differing from it in the reduced amount or absence of cinnamon on the lower ventral surfaces, rather duller breast colouration and slightly paler upper-parts, wings and tail. These populations approximate very closely in their characteristics to *C.s.striatus*, though the blacker throat is sufficiently prominent as to warrant their separation therefrom. In the light of the information now available it would seem best, from the point of view of desirable taxonomic accuracy, to recognize these populations of the south-east African lowlands as an additional race, rather than to continue associating them with the more richly pigmented *C.s.minor*. In considering the application of a name to such a race, consideration must be given to *Colius kirbyi* Sharpe, *Bulletin of the British Ornithologists' Club*, vol. xxi, 1907, p. 32: Lydenburg, eastern Transvaal. Study or Transvaal material shows that most of the populations of the high interior are virtually the same as topotypes of *C.s.minor*, while the "lowveld" birds are paler below, thereby resembling those of Portuguese East Africa. In the eastern high country, *i.e.*, the Transvaal Drakensberg, intermediate populations occur, and it is to such populations that *Colius kirbyi* Sharpe applies. In the circumstances, I believe it would be more satisfactory to leave the name *C.kirbyi* in the synonymy of *C.s.minor*, as placed by Peters, *loc. cit.*, and to describe the eastern low country race as new, fixing the type-locality at or near sea-level in Portuguese territory. The name *C.s.integralis* mihi is introduced below accordingly.

In the eastern districts of Southern Rhodesia and adjacent highland areas of Portuguese East Africa occurs the fourth South African race of the Speckled Mousebird. *C.s.rhodesiae* differs from *C.s.integralis* in being more brownish, less clear grey on the upper-parts, wings and tail, and in having the abdominal surface slightly more washed with cinnamon. The main racial characteristic of *C.s.rhodesiae* is, however, not in the colouration of the plumage but in that of the feet (described on collectors' data labels as "dull red," "dull claret," etc.), which are dull red or pinkish red and not dark purplish brown or purplish slate, as in the three other races occurring in South Africa. This difference is clearly observable even in old museum study skins, the dried feet of *C.s.rhodesiae* being usually a light reddish brown, while those of *C.s.striatus*, *C.s.minor* and *C.s.integralis* are blackish slate.

The nomenclature, characters and ranges of the four South African races of *C.striatus* are detailed in synoptic form as follows:

1. *Colius striatus striatus* Gmelin

Colius striatus Gmelin, "Systema Naturae," vol. 1, pt. 2, 1789, p. 843: Cape of Good Hope, South Africa.

Upper-parts, wings and tail pale brownish grey. On ventral surfaces, throat dark grey, the feathers with broad silvery grey apices; breast and flanks greyish buff finely vermiculated with a darker shade; abdominal surface buffish white or pale buffish cinnamon. Feet dark purplish brown. Wings ♂♀ 91–96.5 (94.1) mm.

Material: 65.

Range: Cape Province, mainly in the south-western, southern and eastern districts, and in the southern parts of the Orange Free State. Intergrades with *C.s.minor* in Pondoland, East Griqualand and adjacent regions.

2. *Colius striatus minor* Cabanis

Colius minor Cabanis, *Journal für Ornithologie*, vol. xxiv, 1876, p. 94: Natal. Synonym: *Colius kirbyi* Sharpe, *Bull.B.O.C.*, vol. xxi, 1907, p. 32: Lydenburg, eastern Transvaal.

Similar to *C.s.striatus* but slightly darker on upper-parts, wings and tail. On under-parts noticeably different on account of the more blackish throat, which is less obscured by the pallid apical fringes of the feathers. Also slightly darker on the breast and flanks, and with the abdominal surface and crissum heavily washed with deep cinnamon. Averaging smaller in size.

Wings ♂♀ 86.5–96.5 (91.0) mm.

Material: 60.

Range: Natal, Zululand, north-eastern Orange Free State and most of the Transvaal. Intergrading with the next subspecies in northern Zululand, western districts of Swaziland, and in the eastern Transvaal Drakensberg.

3. *Colius striatus integralis* subsp.nov.

Closely resembles *C.s.minor* in the deep blackish throat, but differs in lacking the strong cinnamon wash over the abdominal surface and crissum, in which respect it approximates closely to *C.s.striatus*. In addition to having a blacker throat, *C.s.integralis* differs from *C.s.striatus* in being darker and greyer on the cheeks and sides of the head, and in having the breast and flanks rather darker. Similar in size to *C.s.minor*.

Wings ♂♀ 87.5–94 (91.9) mm.

Material: 60.

Type: ♀, adult. Vila Luiza (Marracuene), Sul do Save, southern Portuguese East Africa. At sea-level. 11th September, 1955. Collected by Durban Museum Expedition. In the collection of the Durban Museum.

Measurements of the Type: Wing 90, culmen from feathers 12, tarsus 22, tail 206 mm.

Range: Extreme north-eastern Zululand, eastern lowlands of Swaziland, eastern Transvaal "lowveld," southern Portuguese East Africa, and in some districts of south-eastern Southern Rhodesia (mainly between the Bubye and Sabi Rivers) northwards in the low country to southern Nyasaland (mainly east of the Shire River) and Zambezia, northern Portuguese East Africa. Precise limits in the north not determined.

4. *Colius striatus rhodesiae* Grant and Mackworth-Praed

Colius striatus rhodesiae Grant and Mackworth-Praed, *Bulletin of the British Ornithologists' Club*, vol. lviii, 1938, p. 65: Umtali, eastern Southern Rhodesia.

Differs from *C.s.integralis* in being rather browner, less clear grey on upper parts, wings and tail. Lower ventral surface lightly washed with cinnamon. Foot colouration quite different, being dull red or pinkish red, nor dark purplish brown. Similar in size.

Wings ♂♀ 88–91 (89.6) mm.

Material: 14.

Range: Eastern highland areas of Southern Rhodesia, and in the adjacent highlands of southern Portuguese East Africa. Recorded by Roberts as occurring at the Victoria Falls (very doubtful) (*vide* White and Winterbottom, *Check List of the Birds of Northern Rhodesia*, 1949, p. 66).

Colius striatus berlepschi Hartert.

Colius leucotis berlepschi Hartert, in Ansorge's *Under the African Sun*, Appendix (Birds), 1899, p. 333: New Helgoland, north-eastern shore of Lake Nyasa.

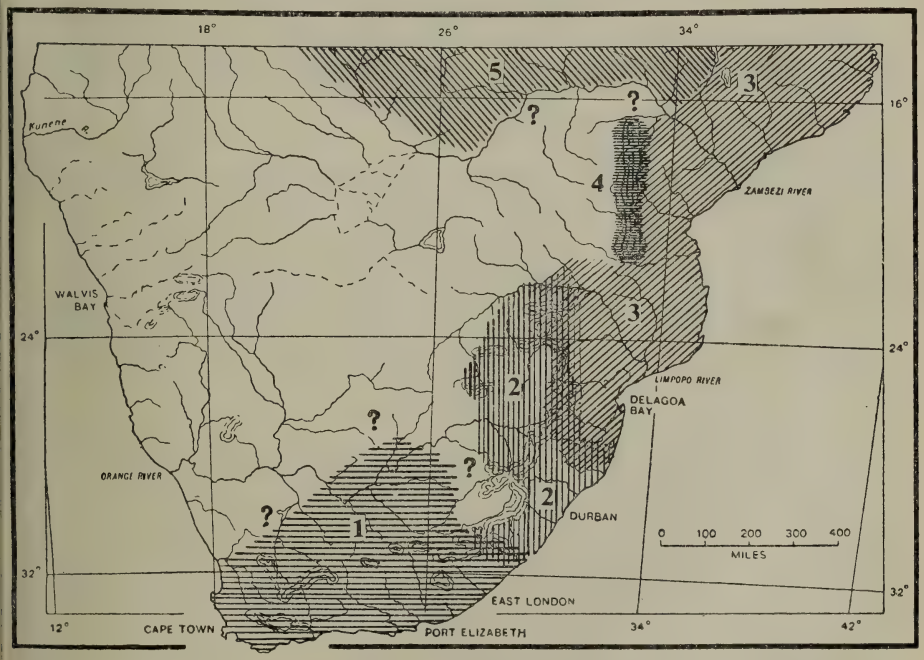
This race conceivably occurs within South African subcontinental limits, as it ranges south to western Nyasaland and most of eastern Northern Rhodesia. It can be expected to reach the valley of the Zambesi River at points to the west of the range of *C.s.integralis*. It should be noted that *C.s.berlepschi* is now considered to be distinguishable from *C.s.affinis* Shelley, 1885: Dar-es-Salaam, Tanganyika Territory.

COLIUS STRIATUS Gmelin

Map showing the approximate ranges of the southern African races of the Speckled Mousebird

1. *C.s.striatus* Gmelin
2. *C.s.minor* Cabanis
3. *C.s.integralis* Clancey
4. *C.s.rhodesiae* Grant and Mackworth-Praed
5. *C.s.berlepschi* Hartert

Cross-hatching represents zones of racial intergradation.



A New Form of *Malimbus nitens*

by MR. C. M. N. WHITE

Received 15th August, 1956

Malimbus nitens moreaui subsp.nov.

Description: differs from both the other races of *M.nitens* in its longer wing, 91–97 mm. against 83–92 mm.; and longer bill, 21–25 mm. against 20–21 mm.

Type: male adult collected at Efulen, Cameroons, by G. L. Bates on 16th December, 1902. In the British Museum (Natural History). Reg. No. 1903.10.26.45.

Distribution: South-eastern Nigeria to Gaboon and the middle Congo at Lukolela.

Note: nominate *nitens* ranging from Sierra Leone and Portuguese Guinea to Lagos is a small bird extremely like the form *microrhynchus* of the upper Congo. In fact, on comparing *nitens* and *microrhynchus* the only difference seems to be that *microrhynchus* has a slightly slenderer bill than *nitens*. Between them, as Chapin has noted in his *Bds.Belgian Congo*, vol. iv, there is a larger bird with a decidedly larger bill for which a name is required.

Taxonomic Notes on African Pipits, with the description of a new race of *Anthus similis*

by Mr. C. M. N. White

Received 12th August, 1956

The following notes have been prepared in conjunction with a list of the African Pipits for the forthcoming volume of *Peter's Check List of Birds*.

(I) *Anthus similis*

The following races require comment:

(*a*) *A.s.hararensis* Neumann

Populations from Eritrea to northern Tanganyika show some variation but not, in my view, sufficient to justify the recognition of either *A.s. neumannianus* Hartert and Collin or *A.s.chyuluensis* van Someren. Birds from Eritrea are exceptionally greyish above and may with more material deserve subspecific status. Otherwise this area is inhabited by populations with a streaky upperside of dark feather centres and light brown feather edges. Specimens from northern Tanganyika and from the Yavello area of south Ethiopia exhibit a stronger contrast of light and dark pattern above than others from Ethiopia and Kenya.

(*b*) *Anthus similis hallae* subsp.nov.

Description: Rather smaller than *A.s.hararensis* and easily separable in colour; bill 16.5–18.5 mm. against 17.5–19 mm. and wing 86–97 against 89–106 mm. Upperside light greyish not brownish or rusty as in *hararensis* and *nyassae* and with less pronounced streaking. Underside whitish in contrast to the rich tawny of *hararensis*.

Type: Adult male collected at Lake Karange, Ankole, Uganda, by T. V. Fox, on 13th December, 1910. In British Museum (Nat. Hist.) Reg. No. 1923.8.7.2494.

Distribution: Eastern edge of Belgian Congo from Lakes Albert and Edward to Kivu and adjacent parts of Uganda to Entebbe.

Note.—Chapin has already commented on the possibility of this race being separable. The large series of *A.s.hararensis* now in the British Museum leaves no doubt that the Congo race stands rather clearly apart.

(*c*) *A.s.nyassae* Neumann

There is much individual variation in a large series of this race; freshly moulted birds are very rusty above, and strongly vinous below. Comparatively little wear alters the upperside to a browner tinge and makes the

abdomen white. I have compared specimens of *A.s.schoutedeni* Chapin from the middle Congo and find them inseparable from *nyassae* in a similar state of wear. I cannot find any good ground for separating birds from the middle Congo and Angola from those of Nyasaland and south Tanganyika and would unite all as *A.s.nyassae*.

(*d*) *A.s.bannermani* Bates

This is in my opinion a race of *A.similis* and I have failed to separate *A.s.chapini* Grote of the Cameroons from others from Sierra Leone.

(*e*) *A.s.leucocraspedon* Reichenow

There is a cline of increasing pallor through Little Namaqualand and South West Africa to the north-west of the latter territory. *A.s.leucocraspedon* described from Windhuk is rather whiter below and less streaked on the breast than the South African form *nicholsoni*. A series from Erongo is also paler above. Clancey has recently separated these paler birds as *A.s.palliditectus*, described from the Kaokoveld. But if it is desired to name these birds as well as to recognize *leucocraspedon* as an intermediate, it may well be too fine a division.

(*f*) There is a Long-billed Pipit, unsexed, in the British Museum, collected at Jos, Northern Nigeria on 20th September, 1951, by R. E. Sharland. It is intermediate in colour between *A.s.bannermanni* and *A.s.hararensis*, closest to the former but with less heavy streaking on the breast, and paler edges to the feathers of the head and mantle. Dr. Vaurie has kindly compared it with specimens of *A.s.asbenaicus* and found it quite distinct, *asbenaicus* being a pale sandy form. It is probable that it represents a new race but further specimens are needed.

I have examined all the other races except the recently proposed *A.s.petricolus* Clancey believed to represent a dark population on the Basutoland mountains. It is to be noted that there appears to be a quite sharp break between *nicholsoni* and *nyassae*, and no intergradation along approximately the line of the Zambesi valley has yet been demonstrated.

(II) *Anthus novaeseelandiae*

1. Racial variation in east, central and southern Africa can only be defined in terms of very broad subspecific divisions, owing to the tremendous amount of local variation which is irregular, broken and repetitive. After examining a large amount of material in the British Museum, Transvaal Museum, National Museum, Bulawayo, some on loan from the Congo Museum,Tervuren, and others in my own collection, I conclude that there is a cline from the richest coloured birds in Ethiopia to the palest in west Angola. *A.n.cinnamomeus* is, of course, the earliest available name for any of these populations, and is based on Ethiopian birds. From Somaliland and Kenya to the Zambesi the populations are as a rule lighter and less richly coloured but the difference is not absolutely clear cut. A number of birds from Kenya are as dark as Ethiopian birds whilst some light birds occur in Ethiopia. Moreover pockets of dark birds occur sporadically well south of Ethiopia, e.g. in the mountains along the eastern edge of the Belgian Congo and in southern Tanganyika, and in north Nyasaland and adjacent Northern Rhodesia. I have concluded that it is more satisfactory not to separate any other races than *cinnamomeus* in this area; *lacuum* Meinertzhagen described from Naivasha in Kenya lies in an area where many dark birds occur but is the earliest available name of the

races commonly recognized if they are to be separated from *cinnamomeus*. However as I shall show below *latistriatus* Jackson is really an aberrant bird of the same species and is in fact the earliest available name if the East African race is to be kept distinct from *cinnamomeus*. Of other proposed races it can be said that *annae* Meinertzhagen from British Somaliland can be matched in Tanganyika and in western Northern Rhodesia by similar pale birds; *lichenya* Vincent from south Nyasaland is based on a worn and dirty specimen; *spurium* Clancey is quite like many Nyasaland and Tanganyika birds. In the south of the range there are very wide belts of intergradation with *bocagii* and *rufuloides*. One other race must be mentioned, *katangae* Chapin. After examining the type and another from the type locality I can see no reason to keep it separate either.

I distinguish *cinnamomeus* as now defined by its well marked streaking above as compared with *rufuloides* and by this and its darker colour as compared with *bocagii*. The upper side is too variable in colour to be very reliable. Many birds in Southern Rhodesia and the south of Northern Rhodesia are like *cinnamomeus* and others like *rufuloides*; in Barotseland many are like *bocagii*.

A.latistriatus is a very dark bird collected in Kavirondo and is, I consider, a melanism of this species. The tail shows in shadowy outline on the second outermost feather the typical white wedge of Richard's Pipit, much suffused with grey. There is no justification for using the name as Chapin has for the dark birds of the highlands of the east Belgian Congo. In fact these dark birds are very like Ethiopian birds and occur sporadically further south as already noted.

2. *A.n.lwenarum* White represents a very well marked race ranging from Mwinilunga to Balovale in Northern Rhodesia. The dark centres of the mantle are only dappled, not sharply defined; the second outer tail feather is dark with only a little light at the tip, whilst the outer tail feather has the normal white area replaced by smoky buff. In view of the constancy of the tail pattern of Richard's Pipit, this might be thought to be a specific pattern. But my own field experience convinces me that this is a Richard's Pipit. Moreover, birds from Kasaji in the south-west Belgian Congo link it to East African birds for they have light second outermost tail feathers but suffused with smoky buff. They have been called *katangae*, but Dr. Schouteden has kindly lent the type of *kantangae* which is indistinguishable from many East African birds. Examination of a long series of East African birds shows that there is a sporadic tendency for the second outermost tail feather to lose its white pattern there, so that *lwenarum* merely represents in this the dominance of what is a rare character elsewhere.

3. In Africa south of the Zambezi three races can be recognized. *A.n.rufuloides* in South Africa and Southern Rhodesia is less patterned above than *cinnamomeus*; in Southern Rhodesia and the Transvaal birds occur with the well-marked streaking above found in East Africa but it is most satisfactory to treat the Zambezi as the boundary between the races.

A.n.bocagii is still paler, and below with a less streaked breast than *rufuloides*; it occurs from west Angola to South-West Africa, north Bechuanaland and Barotseland.

A.n.editus Vincent of the Basutoland mountains is a slightly darker bird than *rufuloides* and has a dark second outermost tail feather with a light buffy tip.

A.hoeschi is in my view a synonym of *bocagii*. Dr. Stresemann has lent the type for examination; it is a large bird with an upperside like *lwenarum* and a dark second outermost tail feather. Individually all its characters can be found in other examples from South-West Africa. Its lightly spotted breast agrees with *bocagii* and seems to preclude its being a stray *lwenarum*. The dark second outermost tail feather which appears sporadically in Richard's Pipit, and is stabilized in *lwenarum* seems to be associated for some curious reason with a rather large size, but it seems impossible to believe that there are two species involved. Thus *bocagii* males have wings 84–93 mm., *rufuloides* males 87–94 mm. and *lwenarum* 93–97 mm. To recapitulate, I recognize in this area.

A.n.cinnamomeus (Synonyms *annae*, *lacuum*, *lichenya*, *latistriatus*, *spurium* and *katangae*).
A.n.lwenarum.
A.n.rufuloides.
A.n.editus.
A.n.bocagii (syn. *hoeschi*).

The proposed treatment of racial variation in the eastern and southern African populations of this pipit is admittedly rather drastic, but when variation is so irregular and inconstant that numerous specimens could not be assigned to a racial identification except by reference to the label, it is, in my view, quite out of keeping with a modern biological approach to taxonomy to load the nomenclature with additional subspecific names.

(iii) *Anthus lineiventris*

I have examined a large series of this pipit from all parts of its range without detecting any constant geographical variation. I do not therefore consider that *A.l.stygium* Clancey can be maintained.

(iv) There are in the British Museum four hitherto unrecorded African pipits of considerable interest. Three of these are Richard's pipits taken on 18th October, 1940, 1st November, 1904, and 1st March, 1905, at Lake Chad by Boyd Alexander. The measurements of these birds are ♂ wing 96, tarsus 29; ♀♀ wing 92, 92, tarsus 28, 29. They are clearly winter migrants of one of the northern Palaearctic races, *richardi*, *centralasice* or *dauricus*. Since the validity of these races is in doubt and it is in any case impossible to name migrants satisfactorily, it is convenient to call them *A.novaeseelandiae richardi*.

A fourth specimen, a male, was also collected by Boyd Alexander on 18th October, 1904, at Lake Chad. This has been identified by Mrs. Hall, who has been working on Asiatic pipits, as *A.godlewskii*,* a species which breeds in Mongolia and has not before been recorded in Europe or Africa. It seems probable that it was caught up with the migrant Richard's pipits. It has a wing of 95 mm., tarsus 25, bill 18, tail 68, hind claw 14 mm. Its short tarsus, the different pattern of the second outermost tail feather and finer bill distinguish it from the Richard's pipits. In *A.godlewskii* the first primary is commonly longer or equal in length to the second, and the fact that in this specimen it is 4 mm. shorter raised some doubt on its identification; however, examination of all the specimens of this species in the

British Museum shows that several other autumn species have similar first primaries, and it may be that the feather is not quite fully grown although no sheath is visible.

I am indebted to Mrs. Hall and Captain Grant for help whilst studying these pipits; to the Congo Museum, Tervuren and Royal Scottish Museum, Edinburgh, for the loan of specimens from the Belgian Congo and Cameroons, and to Dr. Stresemann for the loan of the type of *A.hoeschi*.

*This form has been considered a race of *A.campestris* but it is the opinion of Dr. Vaurie, with which Mrs. Hall and I agree, that it is best considered as a monotypic species.

Taxonomic notes on Northern Rhdoesia birds

by Mr. C. M. N. White

Received 15th August, 1956

The following miscellaneous points have arisen during studies required for a forthcoming edition of the *Check List of the Birds of Northern Rhodesia*.

1. *Caprimulgus natalensis* Smith

This nightjar has a very patchy range in many parts of its distribution and the differences between races suggest that some local populations exhibit irregular variation rather than well-defined subspeciation. The difference between birds from Natal and Zululand (*natalensis*) and many from Uganda, the Sudan and Nigeria (*chadensis*) is very slight; birds from the south and south-west Belgian Congo are also difficult to distingusih from *natalensis*. Birds from near Luwingu in Northern Rhodesia have been called *C.n.mpasa* and a series examined certainly is rather greyer than most *natalensis* and *chadensis*. The type of *fulviventris* is unlike any birds from adjacent parts of the Belgian Congo in its bright colouration. Birds from the Caprivi strip have been called *C.n.carpi* and differ most from other races in their plainer upperside due to reduction of bold patterning; they are also pale and greyish. A single bird from Balovale is as plain and finely marked as *carpi* but much redder above. There is evidently a widely distributed type of plumage corresponding with *natalensis* and *chadensis* which can be separated with difficulty if at all; also a number of divergent populations more obviously different to which no ranges can be assigned. I doubt if at this stage such isolated populations can properly be regarded as subspecies. Certainly far more material is needed to enable any clear pattern of geographical variation to be defined. Until this is done I would be inclined only to accept *natalensis*, *gabonensis* and *accrae* as races.

2. *Campethera abingoni* (Smith)

Two points require comment. The difference between *C.a.vibrator* Clancey and the nominate race. There is no doubt that some birds from the Transvaal north to eastern Tanganyika do exhibit the characters claimed for this race; if they are considered sufficiently well marked the race should therefore be called *C.a.suahelica* (Reichenow), the type locality of which is Dar-es-Salaam. I personally regard woodpeckers as unsatisfactory for fine splitting owing to their great individual variation.

Although I admit that about half of the birds from the area indicated can be separated from typical *abingoni*, I would not maintain a separate subspecies for them.

In Angola *C.a.annectans* varies in size; birds from the north (Loanda, Ambriz, Ndala Tando, Pungo Andongo and Duque de Braganca) are small; wings of 11 measure 109–117 mm. Further south they are larger; 18 measure 115–127 mm. The type of *annectans* is a small bird (wing 110) but for geographical reasons must represent the larger population. As there is overlap and the ranges are continuous I do not see any point in recognizing two subspecies. *C.a.annectans* extends over Northern Rhodesia (except the Eastern Province), and into Tanganyika from Ufipa to Rukwa and Mpanda.

3. *Phyllastrephus terrestris* Swainson

Variation in this bulbul from Kenya to Portuguese East Africa is ill-defined, and it is perhaps best to regard *P.t.suahelicus* Rchw. as extending along the whole coastal area and inland to Nyasaland and Northern Rhodesia as far west as the railway line. On the whole birds from the north of the range are most consistently dark; further south there is much individual variation and lighter birds are common. The extreme paleness is reached in Barotseland, Bechuanaland and south Angola. These pale extremes may be called *P.t.rhodesiae* Roberts (1917 Machile R.). This seems a more satisfactory arrangement than using *P.t.intermedius* Gunning and Roberts (1911 Umbelluzi R.) for the birds from south of the Zambezi as a whole. Whichever name is adopted no clear line of demarcation for the two races recognized can be drawn.

4. *Prionops retzii* Wahlberg

The demarcation between races is very ill-defined. Variation is clinal and affects size and colour. Nominate *retzii* is large (wing 135–144) and the dark upperside has a brownish tinge. It extends to Barotseland as far as Senanga. Further north similarly large birds are blackish grey above without the brownish tinge and represent *P.r.nigricans* Neumann. They extend from Balovale and Mwinilunga to Ndola and Bangweulu. The rest of Northern Rhodesia is inhabited by birds nearest to *P.r.tricolor* but of varying degrees of intermediate characters. The main features of *tricolor* are small size (wing 121–135 mm.) and light mantel with a generally marked brownish tinge in the grey. Mr. Benson has kindly given me details of many birds measured by him which show that a series from the Luangwa valley at Mpika have wings 124–134 mm., another series from the plateau at Mpika 129–138 mm. On colour birds from the Northern and Eastern Provinces of Northern Rhodesia are nearest to *tricolor*, gradually averaging darker above in the west where they meet *retzii* and *nigricans*; it would be most satisfactory to call most Northern Rhodesia birds *tricolor* with *retzii* and *nigricans* occupying small areas.

5. *Hyliota australis* Shelley

There appears to be a cline of variation from the Ituri to Kakamega in the north (no white on tail) to Nyasaland and Portuguese East Africa (white on both webs of outer tail feathers of males extensive). More adequate material is needed but six from the latter localities are constant and represent *H.a.inornata* Vincent. The only male from Southern Rhodesia has white only on the outer web. In four males from the

Katanga and north-west Northern Rhodesia, three have no white on the outer tail feathers. Either *slatini* or *inornata* should be recognized on this data; on geographical grounds probably *australis* was named on birds nearest to *inornata*, leaving *slatini* for the black-tailed birds. The correct treatment should be decided upon after more material is available, but it appears wrong to unite both *inornata* and *slatini* with *australis*.

6. *The names of two African Swallows*

There is no very obvious reason for keeping *Petrochelidon spilodera* (Sund.) and its allies separate from *Hirundo* and if this is done the bird breeding on the Kabompo river in Northern Rhodesia and north to Angola and the western Belgian Congo will be known as *Hirundo spilodera rufigula* Bocage (1878 Caconda).

At the same time it has been accepted for some time that no very good characters exist to keep up *Ptyonoprogne* as a genus distinct from *Hirundo*. When this is done *Hirundo fuligula rufigula* (Fischer and Reichenow) (1884 Naivasha) becomes preoccupied by Bocage's name. Fortunately no new name is required as the later *rufigula* can be called *H.f.fusciventris* Vincent (1933 Namuli, Portuguese East Africa), a name which has not been accepted as denoting a subspecies distinct from the East African bird. I am much indebted to Mr. C. W. Benson for drawing my attention to this question.

7. *Lanius collaris dominator Clancey* (1954 *Mpika, Northern Rhodesia*)

The shrikes of this species exhibiting the characters of this new race are apparently identical with *L.c.capelli* (Bocage) of Angola and the south-western Congo. I can find no grounds for keeping them distinct.

8. *Races of Red backed Shrike wintering in Africa*

Vaurie (*Amer.Mus.Novit.* No. 1752, p. 2–4, 1955) proposes to recognize four races within what has generally been called *Lanius c.collurio*. The identity of wintering birds is therefore of some interest. However, on examining the material in the British Museum I cannot find any difference to separate breeding *iuxtus* Clancey from nominate *collurio*; nor can I find that *kobylini* is well enough defined to be worth keeping up as a valid race for many similar birds occur well into eastern Europe and Russia. I have seen no breeding examples of *pallidifrons* Johansen but some birds on passage suggest that there may be some ground for this race, and two (from Abyssinia and Zeyla) are similar to them. All other wintering African *collurio* agree with the nominate race.

9. *Melaenornis pammelaina* (Stanley)

The races recognized of this species are generally two but opinions differ as to their names and ranges. Thus the nominate race has been applied to East African birds with *ater* Sundevall as a southern race differing in size; or the nominate race has been used for southern birds with *tropicalis* as a supposed East African form differing in colour of gloss. I can see no real difference in the gloss anywhere in the range to justify basing races on this character. There is a difference in size, most marked in tail length, but even so clinal and overlapping. The best division if one is made is on size as already noted by Chapin (*Bds.Belg.Congo*, vol. 3). But in view of the lack of any well marked distinction, I think the most satisfactory course is to use a binomial designation.

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DINNERS AND MEETINGS FOR 1957

19th February, 19th March (joint with B.O.U.), 16th April, 21st May, 17th September, 15th October, 19th November, 17th December.

SEPARATES

Contributors who desire free copies of the Bulletin containing their notes should state so on their MS., otherwise these will not be ordered. These will be supplied up to a maximum of fifty.

PUBLICATION OF THE "BULLETIN"

Members who make a contribution at a Meeting should hand the MS. to the Editor at that Meeting. As the proofs will be corrected by the Editor, it is essential that the MS. should be correct and either typed or written very clearly with scientific and place names in block letters. The first mention of a scientific name should be spelt out in full, i.e., genus, specific name, racial name (if any), and author. Any further mention of the same name need only have the initial letter of the genus and no further mention of the author.

If no MS. is handed to the Editor at the Meeting, a note will be inserted mentioning the contribution.

BLACK AND WHITE ILLUSTRATIONS

The Committee have decided that in future the Club will pay for a reasonable number of black and white blocks at the discretion of the Editor. If the contributor wishes to have the blocks to keep for his own use afterwards, the Club will not charge for them, as has been done in the past.

Communications are not restricted to members of the British Ornithologists' Club, and contributions up to 1,500 words on taxonomy and related subjects will be considered from all who care to send them to The Editor, Dr. J. G. Harrison, "Merriewood", St. Botolph's Road, Sevenoaks, Kent.

Communications relating to other matters should be addressed to the Hon. Secretary, N. J. P. Wadley, Esq., 14 Elm Place, London, S.W.7.

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Bird Room

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Edited by
DR. JEFFERY HARRISON

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BULLETIN
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Volume 77
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Published: 1st March, 1957

The five hundred and fifty-fourth meeting was held at the Rembrandt Hotel on Tuesday, 19th February, 1957, following a dinner at 6.30 p.m.

Chairman: MR. C. W. MACKWORTH-PRAED.

Members: 41; Guests: 8; Guest of the Club: Dr. W. H. Bierman; Total: 50.

An Ornithologist's Trip to Morocco

Dr. W. H. Bierman, who had come over from Haarlem to address the Club, gave a most interesting talk on this subject, illustrated with slides. A paper will be published in the April issue.

Bird Protection and Nature Reserves

by MR. E. M. NICHOLSON

A Talk given to the Club at the January Meeting

What does bird protection in Great Britain amount to? Does it, in fact, protect birds? How does it relate to the wider task of nature conservation?

It is particularly timely to consider these questions. After more than seventy years under ineffective and incoherent legislation, we have now experienced two years of the operation of the Protection of Birds Act, 1954, and seven years of the National Parks and Access to the Countryside Act, 1949, which provided for Statutory Nature Reserves.

The 1954 Act has many good points in protecting all birds, their nests and eggs, with certain stated exceptions. It possesses, at least in principle, the merits of simplicity and uniformity; it also takes fairly full account of scientific knowledge and provides for scientists to be consulted about modifying Orders and about the matters left to the discretion of the Secretaries of State. The Advisory Committees, whom they must consult, not only represent different aspects of ornithological interests and opinion, but are able to draw upon scientific resources where further investigation is needed. The penalties provided are now adequate.

On the other hand, there are serious loopholes, particularly that created by the Wild Birds (Eggs of Common Birds) Orders of 1955, constituting a class of birds which are neither game nor pests, but which can be robbed of their eggs with impunity. It is in practice impossible to ensure that egg collecting is confined within the limits set by the law, and difficulties are created for Nature Reserve managements and for research scientists,

particularly by gangs of small boys who regard themselves as having received from Parliament a charter to go round harrying the countryside in their search ostensibly for the nests of the species on the permitted lists.

Experience also shows that the Act makes quite insufficient provision for ensuring that bird protection is effectively carried out. Bird protection depends on education and information and the local authorities having been relieved of their functions in making orders under the former Acts, are deprived of any incentive to do anything for bird protection. In England and Wales, even the display of notices setting out the bird protection laws has been brought to an end since the new Act, although steps have now been taken to have this omission remedied in the near future. At present not only the public but many of the authorities concerned are grossly ignorant of the provisions of the law.

There seems, in addition to be a widespread tendency to distinguish this law from the main body of laws, and to regard its enforcement as not being really the business of the police. Everyone appreciates the intolerable strain on the police in enforcing every modern regulation, but logically if the police are not in practice to enforce this law, someone else must, unless the higher penalties and other improvements introduced by Parliament are to become nugatory. One obvious course would be the enrolling of ornithologists and other keen and interested persons as Special Constables with the sole task of providing expert enforcement officers to relieve the overburdened and uninformed ordinary police on this specialized part of their work. Some Chief Constables have recognized this and, for example, Mr. A. W. Boyd has long been an effective and respected Special Constable for this purpose in Cheshire. However, many Chief Constables seem to take a different view, and it is impossible to rest content until adequate manpower is being devoted to the enforcement of the law, particularly since the previous provisions giving wide powers to members of the public in this respect were repealed in 1954. It is not enough to have a law enacted on a scientific basis; there must also be clear scientific policies well founded on adequate scientific investigations and clearly and vigorously explained to the people to ensure that the law is not merely a piece of paper, more or less erratically observed and enforced, but is a living and vital part of the relations between birds and men in Britain.

However good the law and however well it is enforced, a great deal of bird protection must be achieved by other means. To take a few examples, such a bird as the Reed Warbler could probably not be enabled to increase its numbers or extend its range in Britain by any conceivable legal protection, but the doubling of suitable habitats through creation of reedbeds in claypits and similar waters could be expected to have big results. The Goldfinch was almost certainly greatly assisted by the legal protection given it, particularly against wholesale bird catching, but any further increase in its numbers must, as in the case of the Reed Warbler, depend upon larger areas of suitable habitat. A different example is the Avocet, whose successful colonization of East Suffolk was mainly due to effective wardening by the Royal Society for the Protection of Birds, although the chance provision of suitable habitat also played a vital part.

Much of the future of bird protection, therefore, must lie in gaining better understanding of habitat requirements and in ensuring that suitable

habitats, especially for scarce or threatened species, are provided and are wherever necessary effectively wardened against disturbance, including disturbance by birdwatchers, whose inconsiderate pursuit of rarities can be one of the most serious obstacles to their proper protection. The provision of suitable, undisturbed refuges is particularly important for wildfowl, and since Colonel Meinertzhagen arranged a discussion on this subject about two years ago at the B.O.C. most encouraging progress has been made towards the development of a national system of wildfowl refuges, particularly on the principal estuaries of Great Britain with the support of wildfowlers as well as of ornithologists.

Perhaps the greatest outstanding problem is the development of a reasonable attitude to birds of prey and to predators generally. Discussion on these is still too often emotional and unscientific, and efforts must now be made to bring the light of science to bear on the problem. A distortion of our animal population structure in regard to predators, means a distortion of the structure as a whole, although the many indirect effects are often overlooked. Myxomatosis among rabbits has, fortunately, drawn widespread attention to the importance of these relationships.

The various ornithological and protection bodies, notably the Royal Society for the Protection of Birds, are doing excellent work in this field. But on comparing our situation with that of other countries in North America and north-western Europe, no one can fail to be struck by the extraordinary lack of a broad national organized nature protection movement in this country comparable with the Audubon Societies in the United States, or the Swiss League for the Protection of Nature. It follows from what has just been said about the importance of habitat in bird protection that even from the narrow standpoint of ornithology it is simply not possible to make satisfactory progress without some wider framework of voluntary effort in which bird protection can fall into place as an integral part of nature protection. It is often supposed that Great Britain is a leading country in the nature protection movement, but in this respect we are one of the more backward. Without such a movement much of the work of the Nature Conservancy in establishing and managing Nature Reserves and in carrying out scientific research cannot receive either satisfactory support or adequate dissemination.

(Mr. Nicholson then showed a series of colour transparencies illustrating the different habitats included in the national series of Nature Reserves from the English Channel to the Scottish Highlands, and explained the problems of management involved and the extensive programme of biological and physiographical research being conducted by the Nature Conservancy, Universities and other institutions.)

Birds Drinking

by Mr. J. M. Winterbottom

Received 18th October, 1956

With reference to M. P. S. Irwin's "Notes on the Drinking Habits of Birds in Semi Desertic Bechuanaland" (*Bull.B.O.C.*, 76, 1956:99–101), I can confirm that *Calandrella cinerea* drinks. It is one of the most frequent visitors to water on the karoo and in the coastal area north of Cape Town.

C.sclateri also drinks—the only specimens I have seen were noted at water near Beaufort West.

Irwin says that *Plocepasser mahali* was not seen to drink in Bechuanaland; I have seen it doing so in the Zambezi near the Victoria Falls.

The Sooty Petrel of Latham, *Fregetta fuliginosa* (Gmelin)

by Dr. W. R. P. Bourne

Received 8th September, 1956.

The Sooty Petrel from Tahiti was described by John Latham in his *General Synopsis of Birds* (Vol. III, part 2, 1785, p. 401) as follows:

> "Length, eleven inches. Bill black, an inch long, and hooked at the tip: irides pale ash colour: head and neck sooty black, but the body in general tinged with brown, not unlike the colour of the Swift: the rump is brown, the under parts of the body much like the upper, but paler: the ridge of the wings is mixed with ash colour: the tail somewhat forked in shape, but the feathers square at the ends, their colour, and that of the quills, deep black: the wings when closed exceed the tail a trifle in length: the legs slender, an inch long, and black."

This bird was named *Procellaria fuliginosa* by Gmelin (*Systema Natura*, Vol. I, part 2, 1789, p. 562) and this name was used by Latham in his *Index Ornithologicus* of 1790 (p. 825). The bird has never been recorded from Tahiti since, and the name, which has been applied to a large variety of dark petrels, including *Procellaria grisea*, *Procellaria aequinoctialis*, *Bulweria macroptera*, and various species of *Oceanodroma*, is now usually considered to be indeterminable (Mathews, *Nov. Zool.* 39:176).

The subsequent history of the type in Banks' collection is obscure, but it seems likely that it was one of those birds which passed to the British Museum on Banks' death and was lost or destroyed in the original British Museum collection early in the nineteenth century. It may have been specimen 59 "from Otaheite" in a list of birds brought back from Cook's third voyage among the Banksian MSS. in the British Museum (Natural History), and specimen 74 "bicolor procellaria fuliginosa remigibus caudaque forficata atris" in the associated catalogue of birds in Banks' collection (this specimen is identified in the catalogue as specimen 58 "from amongst the ice between Asia and America" in the third voyage list, but this is obviously the result of confusion with the type of *Oceanodroma furcata*, specimen 75 "from Otaheite" in the Museum catalogue). In a footnote to the original description Latham remarked that in a drawing in the possession of Sir Joseph Banks each web of the toes was marked with a yellow spot. All Banks' drawings are still available and this is obviously a reference to the drawing of the type of *Oceanites oceanicus* by Parkinson, but in addition to this Parkinson drawing Dr. Averil Lysaght has found two other drawings in an unknown hand (probably that of Captain Clerke) of a bird taken at Tahiti on Cook's second voyage which appears to be the Sooty Petrel itself. The first, M.E.24 in the "Original drawings of birds from Captain Cook's second voyage" at the Royal Scottish Museum, may have been made in the field, since it shows grey irides; it is labelled "*Procellaria*," and shows a uniformly sooty-black storm-petrel with a small dark bill with raised tubular nostrils, a grey

eye, faint pale edges to the upper wing coverts, wingtips extending beyond a slightly forked tail, and slender black legs with short toes. The second drawing, no. 10 in Banks' drawings, Vol. 199* B.4 in the Print Room at the British Museum, appears to be an inferior copy made for Sir Joseph Banks; it is also labelled "*Procellaria*" on the front, and "Captain Clerke, 1775, Otaheite" on the back, suggesting that it is a bird taken on the *Resolution* during Cook's second voyage.

Procellaria fuliginosa Gmelin has usually been identified as a member of the *Oceanodroma melania-matsudaira-markhami-tristrami* group of storm-petrels from the subtropical north and east Pacific, but this seems unlikely because these birds are characteristic of a cooler zone of surface water than that of Tahiti or any other station visited by Cook in the Pacific during his second voyage, while they all have very characteristic deeply forked tails with pointed feathers. The only known petrel which agrees at all well with the description and figures of the Sooty Petrel is the unique type of *Fregetta moestissima* Salvin from the Samoa group. *Fregetta moestissima* agrees exactly with the Sooty Petrel in having a brownish-black body with darker wing and tail feathers and soft parts, pale edges to the primary coverts, a slightly forked tail with square-ended feathers, and wing-tips extending just beyond the tail. If it is assumed Latham followed his usual custom with other petrels and measured the bill from the gape to the tip the measurements of the bill and length agree well, since *Fregetta moestissima* is larger than most accounts suggest, being $10\frac{1}{2}$ inches long with a bill of one inch. The only serious discrepancy in the descriptions of the two birds is the length of the legs, said to be one inch long in the Sooty Petrel although they measure two inches in *Fregetta moestissima*. Latham was most careless about this measurement in some other species however, and the drawings show a bird with long legs, so this seems likely to be an error. The accounts are sufficiently similar to suggest that they refer to the same species, with a range which once included the adjacent island groups of Tahiti and Samoa. The fact that the bird has only been recorded once in the relatively distant past in either group suggests either that it is extraordinarily elusive at its breeding stations (which are most probably found in the mountains), or that it is extinct, possibly as a consequence of the introduction of rats to the breeding grounds.

The affinities of *Fregetta moestissima* Salvin have recently been discussed by Murphy and Snyder (*Amer.Mus.Nov.* 1956) who follow Mathews (*Nov.Zool.* 39:151) in concluding that it is a large melanic form of the white-throated storm-petrel variously known by the names *Fregetta amphitrite* Jardin or *Fregetta albigularis* (Finsch), which occurs throughout the central Pacific. Those birds which I have examined support this conclusion, showing a progressive increase in size from the type of *Fregetta amphitrite* from the Marquesas through birds from the New Hebrides and Phoenix group to the type of *Fregetta moestissima* from Samoa. The first two groups have pure white breasts, the bird from Phoenix Islands dark shafts to the feathers of the belly, while *Fregetta moestissima* is dark brown where the other birds are white, with concealed white centres to the feathers of the vent. In a larger series it would probably be found that most of these populations were polymorphic, since Murphy and Snyder report

a minority of birds with streaked underparts from the Marquesas and Line group, Peale reported streaked birds breeding in Samoa (under "*Procellaria lineata*" in *The United States Exploring Expedition . . . under Charles Wilkes,*" 1848), and J. R. Forster described a white breasted bird taken at Tahiti during Cook's second voyage (under "*Procellaria fregata*" in the *Descriptiones Animalium*, 1844), but it seems clear that the species as a whole shows a progressive increase in size and dark pigmentation from north-east to south-west across its range. Four names are available in the following order for different populations:

Procellaria fuliginosa Gmelin, Syst. Nat. I, 2, 1789:562—Otaheite.

Fregetta amphitrite Jardin, *Mem.Soc.Imp.Sci.Nat.Cherbourg* vol. vi: 1859, 172—Marquesas Is. (Another name for *Fregetta tropica* Bonapart, Comptes Rendus 41, 1855:1109, which is preoccupied by *Procellaria tropica* Gould).

Procellaria albigularis Finsch, *Proc.Zool.Soc.Lond.* 1877 (1878):722—Kandavu, Fiji Is.

Fregetta moestissima Salvin, *Proc.Zool.Soc.Lond.* 1879:130—Samoa Is.

As Murphy and Snyder remark, it is difficult to define geographical races of the species with our present knowledge of its distribution and geographical variation, but the first two names could very well be applied to the very different opposite extremes of the known range of variation in Tahiti and the Marquesas.

MEASUREMENTS

(Types in italics: Murphy (*Amer.Mus.Nov.*124) has already shown that there is a very slight sexual dimorphism.)

Origin	*Wing*	*Tail*	*Culmen*	*Tarsus*	*Toe and Claw*
Marquesas (2)	187, *188* (187)	*88*, 96 (92)	14, *16* (15)	*42*, 44 (43)	*32*, 33 (32)
Anatietam (5)	194–204 (200)	97–104 (102)	15–17 (16.4)	45–47 (45.8)	31–36 (33.)
Phoenix Id.	195	103	18	46	35
Samoa	*209*	*112*	*18*	*47*	*34*

This reassessment of the status of the Sooty Petrel was made possible by the discovery of the missing drawings from Cook's second voyage by Dr. Averil Lysaght, and I wish to thank her both for showing them to me and for her comments on this note.

Further notes on the geographical distribution of the "Mottled" plumage mutation of the Rook *Corvus frugilegus frugilegus* Linnaeus

by MR. BRYAN L. SAGE

Received 18th October, 1956.

As a result of the publication of my previous paper on the geographical distribution of this mutation (*antea* 76:25–28), and of appeals for information on the subject made in various local reports, a few additional facts have come to light. These, together with the records published previously, show that this mutation has now been recorded in ten counties, namely Cambridgeshire, Durham, Herefordshire, Hertfordshire, Kent, Lincolnshire, Northamptonshire, Northumberland, Somerset and Surrey.

Herefordshire.—Mr. R. H. Baillie sends me details of an adult Rook seen at Dunfield, Kingston, in July and October 1951, and again in 1952.

When seen in 1951 the wings were "pigeon grey," the back brownish, and the head brownish-black. When seen on 11th August, 1952, however, the whole dorsal plumage was grey, and all the ventral plumage black. There is little doubt that this was a "mottled" mutant. The brownish shade of the plumage noted in 1951 was probably due to a diet deficiency (the same brownish plumage has been noted in some of the aberrant Ashwell birds), by 1952 this condition had apparently been corrected, but the grey mottling had evidently become more pronounced with each moult. On 7th November, 1955, a rook with greyish-white patches on it was seen at Upper Mowley (*Herefordshire Orn.Cl.Rep.* 1955:139). On 31st December the same year Mr. Baillie saw two rooks with much grey on the wings near Kingston. He says that they looked rather like small herons in flight. It seems highly probable that these birds were also "mottled" mutants. This being the case, the number of records from this county suggests that there is a strain of birds in one or more rookeries which are carrying the gene(s) responsible for this mutation.

Hertfordshire.—Mr. Geoffrey Schwann exhibited an adult female rook to a meeting of the Club on 19th March, 1913 (*antea* 31:76). It had been shot by Mr. P. R. Croft at St. Margaret's, near Ware, on 12th March, 1913, having been noticed as a juvenile in 1912. Much of the plumage of the back and wings was greyish. It was stated that a similar bird had been observed there some years previously. This record is of particular interest inasmuch as it is the only record to date regarding the occurrence of this mutation in Hertfordshire in a locality other than at Ashwell. The distance from St. Margaret's to Ashwell in a direct line is about 19 miles.

At Ashwell in 1956 360 young rooks were shot and five "mottled" mutants were found, this being the highest incidence since 1946.

Lincolnshire.—Through the kindness of Mr. R. K. Cornwallis I have obtained details of a fairly recent record of the occurrence of this mutation in this county. In May 1951 some 120 young rooks were shot at West Torrington, and amongst them was one marked with grey. This bird was skinned and retained by Mr. Garth Waite for about a year before being destroyed. Mr. Waite states (*in litt.*) that this bird agreed very closely with the example figured in plate 1 of the BULLETIN 76:27.

Somerset.—Mr. F. R. Smith informs me that there is a record of a rook seen at Selworthy on 7th December, 1947, by A. V. Cornish and H. J. Craske, which was light grey with a dark head (*Devon Bird-Watching and Pres. Soc. 20th Rep.*). This would appear to have been one of the more extreme types of the "mottled" mutation.

Some observations on a Northern Brown-throated Weaver *Ploceus castanops* Shelley at large in Hertfordshire in May 1956

by MR. BRYAN L. SAGE

Received 18th October, 1956.

In a recent article in *British Birds* xlix:339–349 Mr. Derek Goodwin has stressed the importance and value of studying the behaviour of escaped birds found at large in the British Isles. It is for this reason that the following notes are placed on record.

On 29th May, 1956, I was requested to identify a bird that had been at large in Theobalds Park, Cheshunt, Hertfordshire, from at least the 14th May. On arrival I found the bird in the area that it inhabited until its disappearance some time after the 30th May—a dense growth of willows and other deciduous trees by a secluded lake. The bird was obviously a species of weaver that had escaped from captivity, careful field notes were taken, and by reference to skins in the British Museum (Natural History) the bird was eventually identified as an adult male of this species, a native of Uganda and Belgian Ruanda. This individual spent much of its time perching in a hunched position on a fallen branch protruding from the water, with its body plumage very much fluffed out. From this position it would frequently indulge in successful fly-catching sorties at which it proved most adept. When feeding in the trees it was very acrobatic, but somewhat lethargic in its movements, hanging from the tips of slender twigs and picking green caterpillars from the leaves. These caterpillars formed a large part of its diet during the period it was present. When in flight over any distance it flew fast and straight like a starling *Sturnus vulgaris*, with the short square tail splayed out. Mackworth-Praed and Grant (*Birds of Eastern and North-Eastern Africa*, 2:911) state that the call of this species has not been recorded. It may therefore be of interest to state that on several occasions a short "cheep" and a sharp "chip" note were uttered by this bird, both notes being very similar to those of the house sparrow *Passer domesticus*. During the period of its sojourn this weaver showed no desire to associate with any other species of birds, neither did it ever leave the vicinity of the lake. On the whole it was very quiet and unobtrusive in its habits, but most noticeable when perched in the open on account of its predominantly yellow colouration.

I am indebted to Mr. G. A. Horsley of Enfield, Middlesex, who was one of the first to notice this bird, for bringing it to my attention. It was seen on 30th May, but the date of its death or departure is not known.

Taxonomic notes on the Spotted Owl, *Athene brama*, and the Striated Weaver, *Ploceus manyar*, in Siam, including a new race of the latter

by Mrs. B. P. Hall

Received 19th September, 1956

An examination of material in the British Museum (Natural History) from the collection of birds made in Siam by the late Sir Walter Williamson has shown that in that area the races of the Spotted Owl, *Athene brama* (Temminck), and the Striated Weaver, *Ploceus manyar* (Horsfield), require revision, with the recognition of a new race in the latter species. These notes have been made in consultation with Mr. H. G Deignan and the revision has been made possible by the generous loan of specimens from the United States National Museum.

Characters and Range of Athene brama mayri Deignan

Mayr (*Ibis*, 1938:313) drew attention to two aspects of variation in *Athene brama* in Burma and Siam. He suggested that the Siamese birds might prove separable from the Burmese birds, *A.b.pulchra* Hume, on

greater size and on having rather heavier spotting on the upper parts. Later Deignan (*Auk* 1941:398) gave the name *A.b.mayri* to the birds of northern Siam which he distinguished from those of Burma and lower Siam on longer wing length, 152–163 mm. against 138–152.

Sixteen specimens from lower Siam in the Williamson collection have wings from 147–157, showing that the more southern Siamese birds run larger than Deignan's material had led him to believe. The following table gives comparative measurements of birds from Burma, northern and lower Siam based on specimens in London and Washington.

Area	*Wing length*	*Average*	*No. of specimens*
Burma	140–153	146	20
Northern Siam ...	147–168	154	18
Lower Siam ...	141–157	151	26

These measurements show that it is difficult to recognize two races in these countries based on size alone. However the Williamson birds in comparison with the Burmese material in London show very markedly the heavier spotting noted by Mayr. The spots on the head of the Siamese birds are large and the spots of the back clear and white, while in the Burmese birds the spots on the head are small and those on the back few in number and tending to be off-white rather than pure white. Additional specimens borrowed from Washington show, however, that these characters are not always constant, two specimens from Mandalay having larger spots and one from near Chieng Mai having reduced spotting. Nevertheless, although there are these few atypical specimens, I believe that the difference in pattern shown between the majority of Burmese and Siamese birds, combined with the average difference in size, make it useful to recognize two races. *A.b.mayri* can therefore be used for all Siamese birds.

A single specimen from southern Annam is rather less heavily spotted on the back than most Siamese birds but in the whiteness and size of the spots on the head agrees with them. It seems probable that *mayri* will be found to be the race of Indo-China.

A new race in Siam of Ploceus manyar (Horsfield)

The Striated Weaver, *Ploceus manyar*, has a wide distribution in the oriental region but is of local occurrence, so that it is poorly represented in collections. Four races are recognized: 1, *P.m.manyar* of Java. 2, *P.m.peguensis* Stuart Baker of Burma, Assam and Bengal. 3, *P.m.striatus* (Blyth) of north-western India. 4, *P.m.flaviceps* Lesson of southern India and Ceylon. In *manyar* the dark parts of the plumage—the feather centres, ear coverts, throat and streaks on the breast—are dark brown: the breast and flanks are washed with rich chestnut: the head of the male in breeding plumage is golden yellow. In *peguensis* the dark parts are black or blackish: the breast and flanks are washed with buff: the head of the breeding male is lemon yellow. Both *striatus* and *flaviceps* are similar to *peguensis* but are slightly paler and vary in the amount and extent of the streaking below, and in the colour of the head of the male in breeding plumage.

Up to the present the few available specimens from Siam and Annam have been referred to *peguensis*. However, twenty-one specimens in the Williamson collection, together with ten others in London and Washington, show

that birds of these countries combine some of the characters of both *manyar* and *peguensis* but are quite distinct from either. In my opinion they represent a new race for which I propose the name

Ploceus manyar williamsoni new race

Description: Males in breeding plumage, and females, similar to *manyar* in having the dark parts of the plumage brown rather than black: similar to *peguensis* in having a buff, not chestnut, wash on the underparts: less heavily streaked below than any other race: the head of the male in breeding plumage intermediate in colour between the golden yellow of *manyar* and the lemon yellow of *peguensis*.

No specimens of males in non-breeding plumage have been examined. It is to be expected that, as in other races, they will resemble the female in pattern but with slightly heavier markings.

Type: ♂ Samkok, central Siam, 11th June, 1921; in the Williamson collection, Brit. Mus. reg. no. 1955.1.4192. In breeding dress. Wing 70 mm. On the collector's label the iris is recorded as brown, the bill as black.

Specimens examined: Siam-Bangkok 9♂ 11♀, Samkok 2♂, Bung Boraphet 1♂? (this appears to be ♀), Chiengrai district 1♂. Annam—Phanrang 1♂, Dran 1♂ 1♀, Tourane 1♀. All taken in the breeding season except the last. Compared with 8 *manyar*, 67 *peguensis*, 8 *flaviceps*, 50 *striatus*.

Remarks: A Samkok specimen has been selected as the type rather than one from Bangkok as Mr. Deignan tells me that he does not know of any record of this species wild from Bangkok itself. It seems likely that the specimens labelled "Bangkok" are from localities outside such as Paklat, five miles to the south, where Herbert (*Journ.Nat.Hist.Soc.Siam* 6, 1926:118) records nesting colonies. He gives the breeding season there and at Samkok as mid-June to August or September.

Mr. Deignan also tells me that the lack of specimens taken in the non-breeding season is not due to local migration but to difficulties of collecting, the birds gathering in the rice fields in large flocks which are difficult to approach. I am very grateful to him for his unfailing patience in answering my many queries on Siamese birds which have arisen throughout my work on the Williamson collection.

A "Needle-tailed" Black Guillemot

by Dr. James M. Harrison

Received 1st November, 1956

The interesting note by Dr. Jeffery G. Harrison[1] on a "Needle-tailed" Guillemot (*antea* 57.8, pp. 113–114) prompts me to record a similar condition in the Black Guillemot, *Cepphus grylle* (Linnaeus).

Through the kindness of Mr. H. E. Axell I received a first summer female which was found on Dungeness on 2nd August, 1956. By wing measurement this specimen belongs to the form *C.g.atlantis* Salomonsen.[2]

This bird, which had died of an enteritis, showed a very remarkable state of plumage. The whole of the body plumage shows some degree of wear, particularly on the mantle and rump, and generally appears rather scaley, this being due to the worn and faded tips of the first summer feathers, the "subtractive moult" of Harrison and Staples.[3]

The wings are profoundly affected, the lesser wing-coverts, scapulars, greater wing-coverts, secondaries and primaries being excessively worn and faded varying in colour from a pale biscuit to a tone just off white. The primary-coverts, bastard-wing and along the shafts of the primaries and secondaries are pale sooty, all the flight feathers being much worn and faded towards the tips. Innermost wing-coverts are sooty black with a few freshly moulted feathers. The white patches on the wings are barred white and pale sooty. Head and neck show very slight moult towards first winter dress.

All the twelve rectrices, except the outermost on the left side, which may be described as ragged, show an almost complete absence of barbs and are to all intents and purposes shafts only for three-quarters of their lengths.

This specimen is then an exact parallel to that described by Jeffery Harrison in the Common Guillemot.

The occurrence of this condition is of considerable interest. That this degree of wear would appear unusual is suggested by the fact that few seem to have been described, and would also indicate that possibly some additional factor to that of physical abrasion may be involved, such as a genetic basis, as is suggested by Mr. Hazelwood (*loc. cit.*). It is perhaps not without relevance to note that I have seen a drake Pochard, *Aythya ferina* (Linnaeus) in full eclipse plumage with much fading and wear in its rectrices though the denudation in this case was confined to the loss of the barbules. A Pochard in quiet fresh water is certainly subjected to far less wear than are the auks inhabiting the more abrasive salt water aided by strong tides and currents. Air friction though doubtless less than that occasioned by water must nevertheless exert its effect towards feather wear, and this can be established by the examination of specimens of *Apus apus* in worn dress. Of course, specimens of that family do also suffer some abrasion from friction against solid substances.

The question is—can the excessive degree of wear recorded in these two instances be confidently ascribed to wear only? I think this is doubtful and consider that a genetic basis may well be involved. Were physical factors alone responsible the condition should also occur in other *Alcidae*, but cases do not appear to have been noted and seem to be unusual.

References

[1] Harrison, Jeffery G., 1955, "A Needle-tailed Guillemot," *Bull.B.O.C.* 78:8, pp.113–114.

[2] Salomonsen, Finn, 1944, *The Atlantic Alcidae*, p. 77.

[3] Harrison, Jeffery G., and Staples, C. P., 1949, "Further as to Colour Change without Moult—Its Incidence and Implication," *Bull.B.O.C.*, 69, pp. 80–103.

On the Scientific Names of the Maccoa Duck and Hottentot Teal

by Captain C. H. B. Grant *and* Mr. C. W. Mackworth-Praed

Received 20th September 1956

In the *Ibis*, p. 318, 1954, Ride and Cain have proposed, and have now placed a proposal before the I.C.Z.N.Bull.Zool.Nom. 12, p. 35, 1956, that *Anas punctata* Burchell, Travels, p. 283, 1822, be retained for the Hottentot Teal, although a female specimen of the Maccoa Duck in the Burchell

Collection in the Oxford University Museum is the type. We have examined this specimen and it is undoubtedly a Maccoa Duck. We understand that the Burchell Collection has only recently been unpacked although it has been at Oxford since Burchell's death.

Mr. W. L. Sclater, in a letter to the *Ibis* of 1893, p. 156, complained that the Oxford University Museum had then many specimens that could not be examined, including the Burchell types.

Here we have a proposal to retain a name for a very different species to that to which it should be attached. This is obviously scientifically unsound and nomenclatorially impossible. We should have the curious anomaly of a name being used for one species and the type specimen on which this name is founded being another species. Burchell's description is:

"*Anas punctata* B. Entirely brown, excepting the chin, the cheeks, and a stripe from the eye, which are white. The eyes, the bill, legs and toes, black: the back sprinkled with minute yellow dots: the under part of the body indistinctly marked with darker spots: the tail short and brown, with the tips of the feathers acute."

which agrees perfectly with the type specimen, and there can be no doubt that it is a description of a female Maccoa Duck and in no way agrees with the Hottentot Teal, *Anas hottentota* Eyton, *Mon.Anat.* p. 129, 1838. The vernacular name Maccoa Duck should be retained, under which name it is known in most standard works. It is admitted, even by Ride and Cain, that the description (*Ibis*, p. 308, 1954) and the type specimen are that of a Maccoa Duck and therefore *Anas punctata* Burchell, should be used for the Maccoa Duck and *Anas hottentota* Eyton, for the Hottentot Teal.

Tunstall's Ornithologia Britannica, 1771

by Capt. C. H. B. Grant *and* Mr. C. W. Mackworth-Praed

Received 29th November, 1956

In *Opinions and Declarations*, 1, Sect. D., pt. D3, p. 83, 1st September, 1956, the I.C.Z.N. has considered this work as being non-binomial as regards the specific names, but accepts the generic names. This is the correct point of view which has been adopted in the case of the genera in Brisson's Orn. 1760.

There is only one genus which has had to be considered, *Pyrrhocorax*, which Tunstall introduced as "X Pyrrhocorax Graculus. Cornish Chough or Daw, Le Coracias or Choucas rouge." Although there is no description of the genus it has been based on a known valid species and can be accepted as having been properly introduced into nomenclature.

This genus is however antedated by *Coracia* of Brisson, also a valid genus with a description and based on the same type species. *Coracia* of Brisson cannot be deliberately and arbitrarily thrown aside as is apparently desired by the I.C.Z.N. and must be used for the Red-billed Chough.

It may be interesting to recall that the late B.O.U. List Committee had on one of their Agendas the question of the validity of Tunstall's work, but it was decided by a majority, not unanimous, vote to make no changes from this work as regards the specific names, the genus *Pyrrhocorax* having already been placed in the synonymy of *Coracia* Brisson.

Agreeing that Tunstall's work has rightly been considered as non-binomial, there are four specific names that drop out and need replacing by specific names of other authors. They are:

(1) *Falco peregrinus* should be *Falco communis* Gmelin, *Syst.Nat.* 1, p. 270, 1788: Europe.

(2) *Falco columbarius aesalon* should be *Falco columbarius alaunicus* Fedinsin, *Comp.Rend.Acad.Sci.Russ.Leningrad*, p. 71, 1927: Sebeshskij Kreis Gouv.Pskpv (Pleskau).

(3) *Anthus spinoletta rubescens* should be *Anthus pensilvanica* (Latham)), *Gen.Syn.Bds.Suppl.* 1, p. 287, 1787: Pennsylvania.

(4) *Motacilla cinerea* should be *Motacilla boarula* Linnaeus, *Mant. Plant.*, p. 527, 1771: Sweden.

On the correct name for the Compact Weaver

by Capt. C. H. B. Grant *and* Mr. C. W. Mackworth-Praed

Received 11th October, 1956

Sclater, *Syst.Av.Aethiop.* 2, p. 744, 1930, uses *Ploceus pachyrhynchus* Reichenow, O.M.1, p. 29, 1893, as the name for this Weaver, and in a footnote states that *Hyphantornis superciliosus* Shelley, *Ibis*, p. 140, 1873, is a homonym of *Ploceus superciliosus* Cretzschmar, *Rupp.Atlas*, p. 24, pl. 15, 1827.

This is not so, as they were originally described under different genera so that both Cretzschmar's and Shelley's name are available. Cretzschmar's *Ploceus superciliosus* is now *Plocepasser superciliosus* and Shelley's *Hyphantornis superciliosa* is *Pachyphantes superciliosus*.

Chapin, "Bds.Belgian Congo," *Bull.Am.Mus.N.H.75B*, p. 304, 1954, rightly uses Shelley's name but places it in the genus *Ploceëlla*, but the similarities are more superficial than actual and we prefer to leave this Weaver in the genus *Pachyphantes*.

Other homonyms of *Ploceus superciliosus* Cretzschmar, are *Ploceus superciliosus* Des Murs, Lefebre's *Voy.Abyss*, p. 110, 1845–50, and *Ploceus superciliosus* Reichenbach, *Zool.Jahrb.*1, p. 155, 1886.

The Races of *Pytilia melba* (Linnaeus) occurring in the South African Sub-Continent, including a New Race

by Mr. P. A. Clancey

Received 8th October, 1956

The Melba Finch or Green-winged Pytilia *Pytilia melba* (Linnaeus), 1758: Angola, is a small, and in the male prettily coloured, species of thorn-tangles and thickets with a wide distribution in the lightly wooded savannas of Africa south of the Sahara. Polytypic variation is well-developed, six or seven races being recognized in recent standard works on Ethiopian birds, although between fifteen and eighteen subspecies have been proposed from time to time by various specialists. In South Africa

only the nominate race is believed by workers to occur (see Sclater, *Systema Avium Aethiopicarum*, part ii, 1930, p. 787; Roberts, *Birds of South Africa*, 1940, p. 355; Vincent, *Check List of the Birds of South Africa*, 1952, p. 110; Chapin, *Birds of the Belgian Congo*, part iv, 1954, pp. 509–510; Mackworth-Praed and Grant, *Birds of Eastern and North-Eastern Africa*, 1955, p. 1008, etc.), but study of the adequate material now available in southern African museums shows that such a view is not strictly correct and that in actual fact two racial groups of populations can be conveniently recognized from within the confines of the sub-continent. It has been found that adult males of the populations resident in the dry western and central districts (*i.e.* northern Great Namaqualand, Damaraland and Ovamboland to Bechuanaland, most of Southern Rhodesia and the western parts of the Transvaal) have wings 60–62.5 mm., a usually completely orange-red culmen and the red of the face and throat a deep, dull vermilion, whereas those of the moister eastern lowlands (Natal and Zululand, Swaziland, eastern "lowveld" of the Transvaal, and southern Portuguese East Africa to the Zambesi River) have the face and throat paler and pinker even occasionally peach-coloured. The males of the eastern low-country populations also differ in being smaller (wings 55.5–60 mm.), in having the culmen dark flesh brown, and in being darker dorsally, especially in the grey of the crown and nape. However, females of the two racial groups of populations do not appear to differ in colour and only slightly on mensural grounds.

Fringilla melba Linnaeus was believed by its describer to come from China, but this has been shown to be erroneous, and following *Zedlitz*, *Journal für Ornithologie*, 1916, p. 31, the correct type-locality is now generally conceded to be Angola. Material from Angolan localities is not available in South African collections at the present time, but through the kindness of Dr. A. L. Rand of the Chicago Natural History Museum, U.S.A., it has been possible to have examples of the two South African races which it is here proposed to differentiate compared with recently taken topotypes. Dr. Rand reports (March, 1956) that material from Damaraland submitted agrees closely with the birds of Angola in the depth of the red of the face and throat, and that examples of the eastern populations from Swaziland and the eastern Transvaal "lowveld" are paler and duller in this respect. It is important to note that Rand was not able to appreciate any difference between the examples from Damaraland and Angola, because Rudolf Neunzig, in a paper dealing with many new forms of Ploceidae, *Zoologischer Anzeiger*, vol. lxxviii, 1928, pp. 107–118, has separated the Damara populations of *P.melba* as an additional race. *P.m.damarensis* Neunzig, 1928: Windhoek, Damaraland, South-West Africa, was separated from the nominate race on the basis of being allegedly paler and duller and rather larger in size. Sclater, in a footnote to p. 787 of his great work on Ethiopian birds, synonymizes *P.m.damarensis* with *P.m.melba*, and the race has been lying forgotten in the synonymy ever since. Following the published findings of Sclater and the more recent observations of Rand, I consider that we should dismiss the claims of Neunzig's *P.m.damarensis* and recognize *P.m.melba* as being the correct subspecific cognomen of the populations resident in the dry western and central regions of the South African sub-continent. The question of the

name to be applied to the duller faced and small-sized birds of the south-east African populations raises no complication whatever, because none of the numerous names in the various racial synonymies appears to be applicable to them. The well-marked *P.m.grotei* Reichenow, 1919: Kionga, mouth of the Rovuma River, south-eastern Tanganyika Territory, in which the red of the throat in adult males extends over the chest, ranges south to just north of the delta of the Zambesi, south and east of which it intergrades with the two races recognized in this paper. Benson, *Check List of the Birds of Nyasaland*, 1953, p. 79, records that examples of this Pytilia from the Fort Johnston area of southern Nyasaland are near to *P.m.grotei*. There is a single male from Port Herald, extreme southern Nyasaland (1st August, 1956), in the collection of the Durban Museum which is close to *P.m.grotei*, while another from Nampini on the Zambesi River, Portuguese East Africa, in the Transvaal Museum is the same as the new subspecies from the low-country of south-eastern Africa, which I propose to segregate below under the name *P.m.thamnophila* mihi, subsp.nov. Rand, in his report, states that three males from northern Bechuanaland (Kabulabula, N'kate, Maun) fall within the range of variation of *P.m.thamnophila* and outside that of the Angola birds (*P.m. melba*), which would suggest that the new race herein described extends its range well up the Zambesi Valley.

For the loan of material and assistance in many directions I am very grateful to the Directors of the Transvaal Museum, Pretoria; Natal Museum, Pietermaritzburg; Museu Dr. Alvaro de Castro, Lourenço Marques; National Museum of Southern Rhodesia, Bulawayo; and also to Dr. A. L. Rand, Chicago Natural History Museum, U.S.A., for his critical observations on South African material submitted to him for study, and Herr W. Hoesch of Okahandja, South-West Africa, for the collecting of a neatly prepared series of Damaraland *P.m.melba*. To Herr H. E. Wolters I am indebted for valuable assistance with the literature.

While it has not been possible for me to examine material of all the proposed races of *P.melba*, it is estimated that about ten or twelve races of this little finch will ultimately require to be recognized nomenclaturally, two of which occur in the South African sub-continent, the nomenclature, characters and ranges of these being as follows:

1. *Pytilia melba melba* (Linnaeus)

Fringilla melba Linnaeus, *Systema Naturae*, 10th edition, vol. i, 1758, p. 180: China—error. Type-locality corrected to Angola, *vide* Zedlitz, *Journal für Ornithologie*, 1916, p. 31. Synonym: *Pytilia melba damarensis* R. Neunzig, *Zoologischer Anzeiger*, vol. lxxviii, 1928, p. 109: Windhoek, Damaraland, South-West Africa.

Forehead, malar surfaces and throat deep, dull scarlet in adult male (about SSO–9–12°); crown, nape and sides of neck light grey; mantle golden olive-green. Breast-band golden olive, frequently lightly washed with red; lower breast, sides of the body and flanks dull buffish white finely banded with dark greyish olivaceous. Bill usually wholly orange-red, but occasionally dark brownish flesh basally on upper mandible. The female lacks the red on the head and the golden olive breast-band of the male, the ventral surface being greyish barred with dark olivaceous grey and white.

Wings ♂♂ 60–62.5 (61.2) mm. (8 Damaraland birds measured).
Material: 55.

Range: Angola, the savannas of the southern Belgian Congo west of the range of *P.m.belli* Ogilvie-Grant, 1907: Mokia, Toro, Uganda, and south-western Tanganyika Territory south through Northern Rhodesia and western Nyasaland to South-West Africa (northern Great Namaqualand, Damaraland, Kaokoveld and Ovamboland), Bechuanaland Protectorate, north-eastern Cape Province, western districts of the Orange Free State, western Transvaal and Southern Rhodesia. Believed to be replaced throughout most of the Zambesi Valley by the following subspecies.

2. *Pytilia melba thamnophila*, subsp.nov.

Scarlet of forehead, malar surfaces and throat in adult male paler and rather more pinkish (usually about SSO–12–12°), occasionally even peach-coloured; grey of crown, nape and sides of neck darker; mantle darker and usually greener. On ventral surface, breast-band usually slightly darker and more sharply defined than in *P.m.melba*, less diffused downwards on to the sides of the body. There is also a tendency, which is quite obvious in series, for the bars on the lower ventral surfaces to be broken up into chains of pearl-like white dots. Bill never wholly orange-red, the basal surface of the upper mandible and the whole culmen being dark flesh brown. Smaller in size. The female of *P.m.thamnophila* does not differ on colour grounds from that of *P.m.melba*.

Wings ♂♂ 55.5–60.0 (57.4) mm. (15 Swaziland and eastern Transvaal "lowveld" birds measured).

Material: 50. Natal, 1; Zululand, 6; Swaziland, 10; eastern Transvaal "lowveld," 18; southern Portuguese East Africa, 15.

Type: ♂, adult. Big Bend, on the Great Usutu River, eastern Swaziland. 8th September, 1955. Collected by Durban Museum Expedition. In the collection of the Durban Museum.

Measurements of the Type: Wing (flattened) 56.5, culmen from base 14.5, tarsus 17, tail 46.5 mm.

Range: Natal (very local), Zululand, Swaziland, the eastern Transvaal "lowveld" and southern Portuguese East Africa north to and apparently well up the valley of the Zambesi River. Intergrades with *P.m.grotei* in Zambezia and with *P.m.melba* to the west of its stated range.

Note: As pointed out above, Rand, in his report, has stated that three males in the collection of the Chicago Natural History Museum from northern Bechuanaland fall within the variation of this new race. A single male in the collection of the Transvaal Museum from Shangombo, Barotseland, collected on 10th August, 1952, is likewise inseparable from topotypical examples of *P.m.thamnophila*. It is upon this information that I have stated under "Range" that this race of *P.melba* extends its distribution well up the valley of the Zambesi.

Special Notice

The next meeting, (joint with the B.O.U.) will be held at the Natural History Museum on Thursday, March 21st, NOT March 19th, as on the cover of the Bulletin.

1957

BACK NUMBERS OF THE "BULLETIN"

Back numbers of the "Bulletin" can be obtained at 2/6 each. Applications should be made to R. A. H. Coombes, Esq., Zoological Museum, Tring, Herts. No reply will be sent if parts are not available.

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DINNERS AND MEETINGS FOR 1957

19th March (joint with B.O.U.), 16th April, 21st May, 17th September, 15th October, 19th November, 17th December.

SEPARATES

Contributors who desire free copies of the Bulletin containing their notes should state so on their MS., otherwise these will not be ordered. These will be supplied up to a maximum of fifty.

PUBLICATION OF THE "BULLETIN"

Members who make a contribution at a Meeting should hand the MS. to the Editor at that Meeting. As the proofs will be corrected by the Editor, it is essential that the MS. should be correct and either typed or written very clearly with scientific and place names in block letters. The first mention of a scientific name should be spelt out in full, i.e., genus, specific name, racial name (if any), and author. Any further mention of the same name need only have the initial letter of the genus and no further mention of the author.

If no MS. is handed to the Editor at the Meeting, a note will be inserted mentioning the contribution.

BLACK AND WHITE ILLUSTRATIONS

The Committee have decided that in future the Club will pay for a reasonable number of black and white blocks at the discretion of the Editor. If the contributor wishes to have the blocks to keep for his own use afterwards, the Club will not charge for them, as has been done in the past.

Communications are not restricted to members of the British Ornithologists' Club, and contributions up to 1,500 words on taxonomy and related subjects will be considered from all who care to send them to The Editor, Dr. J. G. Harrison, "Merriewood", St. Botolph's Road, Sevenoaks, Kent.

Communications relating to other matters should be addressed to the Hon. Secretary, N. J. P. Wadley, Esq., 14 Elm Place, London, S.W.7.

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Bird Room.

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Edited by
DR. JEFFERY HARRISON

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BULLETIN
OF THE
BRITISH ORNITHOLOGISTS' CLUB

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The five hundred and fifty-fifth meeting was held jointly with the B.O.U. at the Natural History Museum, South Kensington, on Thursday, 21st March.

Chairman: Dr. W. H. Thorpe.

B.O.C. Members and Guests 51; B.O.U. Members and Guests 29; Guests of the Union 3 ; Total 83.

Ornithologists' Trip to Morocco

by Mr. W. H. Bierman

A talk given to the B.O.C. at the February Meeting

On the 29th March, 1954, my wife and I embarked with our friend G. J. van Oordt and his car at Rotterdam, reaching Casablanca on the evening of the 3rd of April, after a very bad crossing with birds few and far between. The next three days were spent in Rabat, exploring the town and the country around, including some cork-oak forests, the Marchand road as far as N'Kheila, and Mehdia with its lake that so surprisingly resembled the Muy on Texel. On the 7th we drove to Fès via Meknès, making the round trip Lonelja, Moulay Idriss, Volubilis, Meknès, Fès on the 8th. We slept in Ifrane on the 9th, explored Tizi N'Tretten, Michliffen, Azrou, Aïn Leuh and its cedar forests, driving on to Midelt over the Col du Zad. On the 11th we climbed Tizi N'Talrhemt and followed the Ziz to Ksar-es Souk, exploring the Tafilalet on the 12th. Very strong migration was in progress, the vegetation—relatively abundant owing to an exceptionally cool and wet season—teeming with small birds in many places, showing the strength of their urge by always escaping to another bush in a northerly direction. We also noticed that many warblers seemed to travel in pairs. Flocks of many species of birds were seen crossing the desert. After a stay in Goulmina because of heavy rains we reached Tinerhir on the 13th, visiting the Gorges du Todra next day and driving on to Ouarzazate. We reached Marrakech on the 15th, passing Tizi N'Tichka, crossed Tizi N'Test and reached Taroudant on the 17th. After a stay in the Sous valley we took a new road to Argana, camping in the mountains, and reaching Agadir on the 20th of April. A long drive along the coast from the mouth of the Sous via Mogador, Mazagan, Rabat, Port Lyautey, Merdja Zerga, Larache and Tetuán finished in Ceuta on the 25th. We left Morocco on the 26th, taking the ferry to Algeciras.

On this trip just over 200 different birds were observed; we did not collect.

Comatibis was found nesting in at least 25 pairs at Foum Kheneg, and observed near Ouarzazate, Taroudant and Cap Safi. *Egretta garzetta* was seen in the Tafilalet and near Ouarzazate, *Bubulcus* also being observed south of the Atlas. Nests of this last bird were only seen in Meknès. *Neophron* proved to be far from rare, 25 observations of this bird being made, as compared to two of *Gyps fulvus*, two of these birds being seen in the Sous. On Mogador island *Falco eleonorae* was absent. The only waders seen inland were *Charadrius dubius*, *Tringa hypoleucos*, *Himantopus*, and, of course, *Glareola* and *Cursorius*. *Columba oenas* was observed near Ksar Jidd, south of Ksar-es-Souk, *Merops superciliosus* was abundant in the Tafilalet, hundreds being seen, and also observed in Goulmina and Imassine. More than 400 *Corvus monedula* in a flock near Imouzzèr-du-Kandar and four more near Dayet Aoua, both in the ascent to the Middle Atlas, came as a surprise. Near Ifrane two *Turdus philomelos* kept on singing and behaving as breeding birds; this species only being known as a migrant in Morocco closer investigation seems to be called for. It struck us that the females of *Turdus merula* in the Atlas south of Argana looked much browner than the generally nearly black females we saw in other parts, e.g. near Ksar-es-Souk. *Oenanthe leucura* was always observed to the north and higher up the mountains than *Oenanthe leucopyga*; as far as we saw these two species excluded one another geographically. *Oenanthe moesta*, as well as *Oe.lugens* was only observed on the 14th, near Imiter. *Diplootocus moussieri* was abundant in the Sous valley, many young having already left the nest before we arrived. *Scotocerca* was seen in bushes in the Sous near Taroudant, *Argya fulva* only west of Ksar-es-Souk. Of *Lanius excubitor* three types could easily be distinguished in the fields: the dark-breasted *-algeriensis* near Meknès, the lighter *-dodsoni* near Marrakech, and the very pale *-elegans* nesting in the Tafilalet. *Chloris* occurred in Ksar-es-Souk. *Rhodopechys* was seen near Telouet at a comparatively low altitude. *Emberiza calandra* was singing near Ouarzazate, *Emberiza striolata* being observed along the coast as far North as Cap Cantin. We also noticed how extremely difficult it was to discover any yellow on the breasts of the *Petronia* we saw near Tizi N'Tretten, as compared to those we observed in the Pyrenees on the way back.

For me the most interesting part of our observations consisted in the migration we saw practically all the way: along the coast, along the rivers, high over the mountain passes, and across the desert. Impressive numbers of migrants were seen in practically every spot of vegetation, especially on the irrigated fields along the rivers, in the "palmeraies" and gardens, and in the dry and miserable looking shrubs of the desert. The following birds were seen as migrants:—

Sula bassana, *Ciconia* in flocks of up to 100 individuals, the migration of this species still continuing after our crossing to Spain on the 26th. *Platalea*, *Ardea cinerea* and *-purpurea*. Of *Hieraëtus pennatus* a pair was seen near Mehdia on the 6th, undoubtedly migrants. *Buteo buteo*, once observed. *Accipiter nisus*, on the 8th. *Milvus milvus* on the 4th, *Milvus migrans* in large flocks of over 300 birds on the 11th and 12th, again on the 24th and 25th, and across the Straits of Gibraltar on the 26th. *Circus pygargus*, of which bird we observed a melanistic individual as black as a crow near Ksar-es-Souk. Then we saw two males and at least nine females

of a harrier we could not distinguish from our *Circus cyaneus* (but only one of us had ever seen *C.macrouros*). Although this species is not known from Morocco we think may regard it as a probable winter visitor. *Falco subbuteo*, *Coturnix*, *Haematopus*, *Charadrius hiaticula* and *C.squatarola*, *Arenatia*, *Numenius arquatus* and *N.phaeopus*, *Limosa limosa* and *L.lapponica*, *Tringa glareola*, *T.hypoleucos*, *T.totanus* and *T.nebularia*, *Calidris canutus*, *C.minuta*, *C.temminckii*, *C.alpina*, *C.testacea*, and *C.alba*, *Philomachus*, *Recurvirostra*, *Glareola*, *Stercorarius parasiticus* and *S.skua*, *Larus fuscus* and *L.ridibundus*, *Chlidonias niger* on the 7th overland, near Meknès, *Gelochelidon*, *Sterna sandvicensis*, *Fratercula*. *Columba oenas*, but also *C.livia*, that was migrating in hundreds through the Gorges du Todra on the 14th. *Streptopelia turtur* in very great numbers. *Apus apus* was also abundant. In Rabat and Fès migrants of this last species crowded round the buildings in the evening, finding resting places in corners, behind shutters and sunblinds, and trying to crawl behind pipes in garages. *Apus pallidus*, especially in the Tafilalet. *Merops apiaster*, flying high over the mountain passes in considerable numbers. *Coracias*, *Upupa*, *Jynx*. *Calandrella brachydactyla* was seen in large flocks. *Hirundo rustica* and to a lesser extent *H.daurica* passed by in a constant stream of migrants, now and then *Delichon* and *Riparia riparia* joined them. *Oriolus oriolus*, though generally supposed to be an easterly migrant, was a common sight from the 23rd on, only males being observed; this migration continued on our way through Spain. *Turdus philomelos*, *Oenanthe oenanthe* (very common), *Oe.oe.leucorrhoa*, *Oe.oe.seebohmi* (on the 14th near Foum el Kous), *Oe.hispanica* (in great numbers), *Saxicola rubetra*, *Phoenicurus phoenicurus*, *Ph.ochrurus*, *Luscinia megarhynchos*, *Acrocephalus arundinaceus*, *A.schoenobaenus*, *Sylvia atricapilla*, *S.borin*, *S.communis* (in very great numbers), *S.curruca* (this bird about whose migration only very little is known was observed on the 12th, 13th and 15th), *S.cantillans*, *S.conspicillata*, *Phylloscopus trochilus*, *Ph.collybita*, *Ph.sibilatrix* and *Ph.bonelli*, *Muscicapa striata* (from the 13th on), *M.hypoleuca*, *Anthus pratensis* (also south of the Atlas, on the 15th at Ouarzazate), *A.trivialis*, *Motacilla alba*, *M.flava flava*. *M.f.thunbergi*, *M.f.flavissima*, *M.f.iberiae*, *Lanius senator* (in very great numbers) and *Emberiza hortulana*. Many species that breed in Morocco may still have been on migration, a thing impossible to ascertain for casual visitors. For me the constant stream of migrants were the most fascinating part of this ornithological trip through a little-known country, now to all practical purposes again closed to travellers.

On the occurrence of "Mottled" plumage in the Jackdaw *Corvus monedula spermologus* Vieillot

by Mr. Bryan L. Sage

Received 18th December, 1956.

Through the good offices of Mr. R. S. R. Fitter I have obtained evidence of the occurrence of the "mottled" type of plumage in the Jackdaw. Mr. F. C. W. Stevenson of Sanderstead, Surrey, saw an adult "mottled" Jackdaw in his garden in July 1955, and on a number of subsequent occasions. In reply to my enquiry Mr. Stevenson informs me that the ground colour of this bird's plumage was normal, and that the usual

greyish collar was present. The mottling was greyish in shade, and covered the whole of the breast and the upper parts of the wings (i.e. the wing coverts and probably also the secondaries). He further states that this mottling was irregular in distribution, and not symmetrical like that of the Rook *Corvus frugilegus frugilegus* Linnaeus figured in Plate 1 of the *Bulletin B.O.C.* 76:27.

The "mottled" type of plumage has now been recorded in three species of the genus *Corvus*, namely the Carrion Crow *Corvus corone corone* Linnaeus (see *antea* 76:13–14), the Jackdaw, and the Rook. There is thus a fair amount of evidence in support of the theory that the ancestral species from which the black-plumaged *Corvidae* have evolved was a bird having mottled or speckled plumage.

Scandinavian Jackdaws in Kent, Lincolnshire and North-West Germany

by Dr. Jeffery G. Harrison

Received 24th September, 1956

These notes have been prompted by a female Jackdaw, which I shot in Sevenoaks, Kent, on 3rd April, 1955; the bird was not yet approaching breeding condition and had the well-marked whitish "collar" and pale grey nape, characteristic of the Scandinavian Jackdaw, *Corvus monedula monedula* Linnaeus. The specimen is now in my collection and has been compared at the British Museum with breeding birds from Scandinavia, both by myself and by Captain C. H. B. Grant, and by Dr. James M. Harrison with birds in his collection.

At the time the bird was shot, there was a marked movement of Jackdaws through the area and on 28th March I had seen another similar individual feeding among other Jackdaws near Seal, Kent. The "collar," pale nape and mantle of this bird were easily seen in the field at 25 yards range. In the *Birds of Kent*, vol. II, p. 90, Dr. James M. Harrison has recorded another probable migrant of this form which he had under observation from 1st March to 3rd March, 1939, on the outskirts of Sevenoaks. He has also recorded the fact that occasional British breeding birds can be found showing a white "collar" and the photograph of the skins of two such examples can be seen on page 89. In this case, the "collar" is not so well marked as in the true Scandinavian migrant, and the nape is darker.

While studying the Jackdaws in the National collection, I found two other examples of the Scandinavian form. Both were from the collection of Mr. G. H. Caton Haigh; the first, a male, was shot in Fenly Wood, Lincolnshire, on 20th January, 1919. The second, also a male, was from the same place on 14th February, 1926. These two were not recorded in *The Handbook of British Birds*, Witherby *et al* (1938) or in *The Birds of Lincolnshire*, Smith and Cornwallis (1955).

It seems that the Scandinavian Jackdaw is a scarce winter visitor and passage migrant to western Europe, occasionally reaching England. In view of the paucity of records from north-west Germany, it seems worth-

while giving the following sight records of "collared" Jackdaws, which I saw when I was there between July 1949 and June 1951. All were well seen and showed the paler grey napes in addition to the white "collars." On 30th September, 1949—five in a field near Wilhelmshaven; on 2nd October, 1949—one in company with a Carrion Crow on Borkum Island; on 13th February, 1950—one with six western Jackdaws near Blankenese, Hamburg; on 7th April, 1951, a pair feeding on Cuxhaven waterfront seen at five yards range with a pair of western Jackdaws.

Description of a New Race of *Buccanodon leucotis* from Southern Portuguese East Africa and Eastern Southern Rhodesia

by Mr. Michael P. Stuart Irwin

Received 24th December, 1956

Buccanodon leucotis rufopectoralis new race.

Description: Differs from *B.l.leucotis* Sundevall in having a distinct rusty brown pectoral band, being narrowest in the centre of the breast where it divides the white abdomen from the brown of the throat and upper breast and in virtually lacking the iridescent tips to the breast feathers, these being reduced or absent. Rump brown, not blackish brown as in the nominate form, faint white tipping on centre of rump and white tips to upper tail coverts, though there is some individual variation in this character. Wing 89–95, average 91.7 mm.

Type: Male, adult. Gorongoza Mountain, southern Portuguese East Africa. Collected by M. P. Stuart Irwin, 28th September, 1952; Collectors No. gz/14 National Museum registration No. 11102. In the National Museum of Southern Rhodesia, Bulawayo.

Measurements of type: Wing 91; Tail 53; Culmen from base of skull 20; Tarsus 18.

Range: Eastern Southern Rhodesia and Portuguese East Africa northwards from the Sul do Save.

Material examined: Sul do Save 2; Gorongoza Mountain 4; Eastern Southern Rhodesia 11.

Remarks: A series of 13 specimens have also been examined from southern Nyasaland and are difficult to place racially, having faint iridescent tips to the feathers on the upper breast, pectoral band darker less rusty brown, abdomen with a faint lemon yellow tinge not white. In some characters they most nearly approach *B.l.rufopectoralis* and in others *B.l.kilimense*. They may at once be distinguished from the latter in not having the strongly iridescent blue-black throat of that race and of *B.l.leucogrammicum*, but agree with them in the lemon yellow tinge on the abdomen and in having more conspicuous white tips to the upper tail coverts, though there is much individual variation in this last character. Provisionally I believe them to be better placed with *B.l.rufopectoralis* than described as a new form.

Acknowledgements: My thanks are due to Mr. C. W. Benson for looking over this series of birds with me and who agrees that they should

be described; also to Mr. P. A. Clancey, Director of the Durban Museum and Art Gallery for the loan of comparative material of the nominate form from Natal and of *B.l.kilimense* and *leucogrammicum* from Kenya Colony and Tanganyika Territory.

A New Race of *Francolinus africanus* Stephens from the Drakensberg Mountains of South Africa

by Mr. P. A. Clancey

Received 17th December, 1956

Sclater, *Ibis*, 1912, 1, p. 40, showed that perhaps three races of the Greywing Francolin *Francolinus africanus* Stephens could be recognized from within South African limits on the basis of the material then in the collection of the British Museum (Nat. Hist.), London. Apart from the widely distributed nominate form, Sclater proposed to differentiate a "race" from northern Little Namaqualand on the grounds that specimens collected there differed from examples from the Cape Division in having the chins and throats more densely spotted with black. He also differentiated from the Cape birds the populations of the Transvaal and upper Natal, stating: "The birds from Wakkerstroom (on the Transvaal-Natal border) are again quite different-looking from those of the Cape; they are much more ochreous in general tone, and the lower breast and abdomen instead of bearing the white ocellations on black, so characteristic of the true Cape Greywing, are of a pale fulvous irregularly banded with brown. I should certainly be disposed to recognize this form as a distinct subspecies, but the series in the British Museum is very incomplete, while members of this genus are notoriously variable, probably on account of their sedentary habits." Some years later, Mackworth-Praed, *Ibis*, 1922, p. 115, recognized the three racial divisions of South African *F.africanus* proposed by Sclater, *loc.cit.*, designating them as *Francolinus africanus* subspp. 1, 2 and 3.

A study of material of this species recently assembled by the Durban, Natal and East London Museums shows that at least two races of this Francolin can be accorded nomenclatural recognition from within the confines of the South African subcontinent. Material from the highlands of Basutoland and the high interior of Natal at my disposal shows the characters outlines by Sclater over forty years ago. Birds of these eastern highland populations differ from those of the Cape Province in being darker and more strongly marked with dark umber brown on the upperparts, the feathers lacking, or almost lacking, the delicate pearl-grey apices, which are so characteristic of the nominate race. On the ventral surfaces the birds of the eastern highlands are more buffish and finely banded with brown, rather less mottled white and black, than topotypes of *F.a.africanus*. It would seem advisable to accord recognition to these differences by bestowing a name on the populations of this Francolin found in the Drakensberg Mountains and adjacent highlands.

I have seen insufficient material to enable me to arrive at a decision in respect of the differences noted by Sclater for the Namaqualand population, but a single adult ♂ in the collection of the Durban Museum from

Garies collected on 27th October, 1956, does not differ from topotypical examples of the nominate race. As Garies is many miles to the south of Klipfontein, the locality from which Sclater's Little Namaqualand material came, it is very likely that my single example has nothing to do with the Klipfontein population. It does suggest, however, that if there is a discrete race in Little Namaqualand it has a very limited distribution.

In the meantime, I feel that the birds of the Drakensberg Mountains and adjacent highlands should be described as a new race. This would accord with the *Francolinus africanus* subsp. 3 of Mackworth-Praed, 1922. For this race I propose the name

Francolinus africanus proximus, subsp.nov.

Type: ♀, adult. Mountains 30 miles due east of Maseru, Basutoland (29° 28′ S., 27° 55′ E.). Altitude 8,000 ft. a.s.l. 4th March, 1956. Collected by M. O. E. Baddeley. In the collection of the Durban Museum.

Diagnosis: Differs from *Francolinus africanus africanus* Stephens, 1819: Hottentot country, *i.e.* Cape Province, South Africa, in being darker and more coarsely marked with umber brown on the upper-parts, the dorsal feathers with little or no grey on the apices. In the nominate race the upper-parts are dappled with light pearl-grey. On the under-parts rather more buffish than the nominate race, the feathers of the breast and abdominal surfaces usually finely banded with umber brown, less mottled black and white. Similar in size.

Paratypical material: The *Type* and 3 paratypes.

Range: The Drakensberg Mountains and adjacent foothills in the eastern Cape Province, Orange Free State, Basutoland, the southern Transvaal, upper Natal and western Swaziland.

Measurements of the Type: Wing (flattened) 152, culmen from base 35, tarsus 38, tail 62.5 mm.

Remarks: I am grateful to the Directors of the East London Museum and the Natal Museum for the loan of comparative material, all of which has been collected during the course of the past five years.

Further on the South African races of the Yellow-fronted Canary *Serinus mozambicus* (Muller)

by Mr. P. A. Clancey

Received 12th December, 1956

Writing in the *Bulletin of the British Ornithologists' Club*, vol. 75, 5, 1955, pp.63–66, I proposed to recognize two races of the Yellow-fronted Canary as occurring within the confines of the South African sub-continent, these being *S.m.mozambicus* (Müller), 1776: Mozambique, and *S.m.icterus* (Vieillot), 1823: South Africa. In the same paper I expressed doubt as to the discreteness of the putatively paler *S.m.vansoni* Roberts, described in 1932 from Zweizwe Waterhole, northern Bechuanaland, which I placed as a synonym of *S.m.mozambicus*. Since the appearance of my communication on the South African races of this canary in May 1955, Mrs. B. P. Hall has shown on the basis of material collected by her at Panda Matenga, north-eastern Bechuanaland, that *S.m.vansoni* is rather paler than *S.m.mozambicus*, and, while not a well-marked race, it is worthy

of recognition (*vide* "Ostrich," vol. xxvii, 3, 1956, p. 106). It now appears desirable to recognize the three races as listed by Roberts, *Birds of South Africa*, 1940, p. 366, though in the case of the dark austral one, as recognized by Roberts in his book and by the present author in his review of the South African races, *loc. cit.*, the name in current use (*S.m.icterus*) is now found to be untenable and it is necessary to describe a new race.

Captain C. H. B. Grant, *in litt.*, 23rd November, 1956, has kindly drawn my attention to the fact that the names *Fringilla mozambicus* Müller, 1776, and *Fringilla ictera* Vieillot, 1823, are both founded on the same figures (No. 364, figs. 1 and 2) of *Le Serin de Mozambique* in Daubenton's "*Planches enluminéez d'histoire naturelle*," 1777, the text of which was written by Buffon. Captain Grant is of the opinion that Müller almost certainly had access to the colour plates of Daubenton's work in advance of its publication, as he (Müller) makes mention of Buffon in his description of *F.mozambica* without giving a precise reference. Resulting from this finding, *F.ictera* must be considered a synonym of *F.mozambica*, which leaves the race of the eastern Cape, Natal and Zululand and adjacent regions without a name. I propose:

Serinus mozambicus granti, new race

Description: Similar to *S.m.mozambicus* (Müller) but darker and greener dorsally, the dark feather centres more fully developed. On the ventral surfaces rather deeper yellow, the sides of the body and the flanks washed with darker olivaceous grey. Similar in size.

Distribution: The southern parts of the eastern Cape Province through Pondoland, East Griqualand and Natal to Zululand and the littoral of the extreme southern parts of Portuguese East Africa.

Type: ♂, adult. Embotyi, Lusikisiki district, Pondoland, eastern Cape Province, South Africa. Sea level. 8th August, 1954. Durban Museum Expedition. In the collection of the Durban Museum. Wing 67.5 mm.

Remarks: Named after Captain C. H. B. Grant in recognition of his valuable work on South African birds.

A Note on *Ortygospiza gabonensis* Lynes

by Mr. G. S. Cowles

Received 23rd November, 1956

Specimens presented recently to the British Museum (Natural History) and field notes made in Gaboon by Mr. P. H. M. Vischer provide new information on the plumage characters and habits of the Quail-finch, *Ortygospiza gabonensis*. Nothing seems to have been recorded on this species since Lynes' description (*Bull.B.O.C.*, 1914, 33, p. 131) of the two Gaboon specimens collected by Du Chaillu in the latter half of the last century, and which had been identified in the British Museum collections with the West African *O.atricollis*. Later, *gabonensis* was reunited to *atricollis* as a geographical race, but recently Benson (*Bull.B.O.C.*, 1955, 75, p. 106) has given grounds for believing that the *atricollis* group may consist of two distinct species, or at least behaves as separate species in parts of its range.

The specimens are a male collected on 14th January, 1956, and nearing completion of total moult; another male taken in June; and a female

taken on 19th February, also nearing completion of moult with some feathers of the old plumage still in evidence in the head region.

The main point of interest is that this adult female does not match the female described by Lynes. It is now possible to identify the latter as a juvenile because the plumage matches that of known juveniles from other localities; in addition the skull is incompletely ossified.

Another point is that in these freshly collected males, as might be expected, the pigments are slightly richer, especially the rufous on the abdomen, than in the type which has been preserved for nearly three-quarters of a century. One also has a very few white flecks on the chin, although similar markings are not evident on the other male nor on the type. The importance of these slight differences is that they formed the basis on which van Someren (*Bull.B.O.C.*, 1921, 41, p. 115) made a new race, *dorsostriata*, from Southern Ankole, Uganda. The type of *dorsostriata* has not been examined but a male from Kigambo, not far from the type locality, and two others from Mpumu are no richer in the rufous of the under parts than are Mr. Vischer's males. The amount of white on the chin is variable; on the specimen from Mpumu the white is confined to a very few feathers at the extreme tip of the chin although in the Kigambo specimen there is almost enough white to call it a spot. The adult female from the vicinity of Libreville is practically identical with the female from the Mpumu area.

These new specimens from Gabon, therefore, show that the original description of the adult female *gabonensis* applies to the juvenile and that the race *dorsostriata* is doubtfully distinct.

Mr. Vischer's field observations are important in view of Dr. Chapin's statement (*The Birds of the Belgian Congo*, 4, 1954:503) that "little or nothing has been reported of its behaviour or haunts." The bird was found on the Owendo Plains, which are about ten miles from Libreville and two miles from the coast. They extend over an area of about four square miles and consist of undulating plains of grass which is burnt off each year. A striking feature is the lack of trees other than the secondary forest which encloses the plains. Shallow streams which disappear in the dry season, May to October, follow the low-lying areas, converting these into marshland in the wet season.

Over the whole plain, Mr. Vischer writes, swarm a host of little grass warblers, *Cisticola juncidis*,[1] and it is among these that the Quail-finches occur. They are extremely localized and seem to prefer damp, low-lying, level ground, avoiding the marshy and very dry areas. They were nearly always seen feeding on the ground in little groups consisting of one male and two females. Although very similar to the warblers, the Quail-finch is readily distinguished, not so much by the darker plumage and red bill of the male as by the fact that it always alights on the ground, never on the grass stalks as the warbler usually does.

I would like to thank Mr. J. D. Macdonald and Capt. C. H. B. Grant for examining the specimens and for advice in the preparation of this note.

[1] Identification based on collected specimens. Gaboon seems to be near the junction of the northern race *uropygialis* and the southern *terrestris*. Specimens are identifiable with the latter.

On the genera *Estrilda* Swainson and *Lagonosticta* Cab.

by Herr H. E. Wolters

Received 29th October, 1956

Although there can be no doubt that *Estrilda* Swainson and *Lagonosticta* are closely related genera, it may be advisable to keep them distinct, at least for the time being. My attempts to interpret the morphological characters of these and some related groups of the Estrildinae as well as observations of the behaviour of captive birds have convinced me that *Granatina* Bonaparte and *Uraeginthus* Cab., which I prefer to unite under the older name (*Granatina*), are more closely related to *Lagonosticta* than *Lagonosticta* is to *Estrilda*, notwithstanding the fact that *Granatina* (incl. *Uraeginthus*) lacks all red in its plumage and has a differently shaped tail, which shows some resemblance to that of certain species of *Estrilda*. At any rate it would be inconsistent to unite *Lagonosticta* with *Estrilda* (as I proposed it in 1939, *Orn.Monatsber*, 47, pp. 33–37), if *Granatina* (incl. *Uraeginthus*) is kept distinct. *Hypargos*, too, seems to be rather close to *Lagonosticta*.

If, then, *Estrilda* and *Lagonosticta* are regarded as distinct genera, the question arises, where a line can be drawn between these genera. Several recent authors have placed the species *caerulescens* and *perreini* (which may prove to be conspecific) in *Lagonosticta*. I believe, however, that these species are more closely related to *Estrilda*, especially to *E.erythronotos* (Vieillot) (subgenus *Brunhilda* Reichb.), from which they only differ in the absence of cross-barring of the plumage (the small crescent-like white spots on the flanks of many but not of all individuals may be regarded as a last trace of an ancient cross-barring of these feathers), a shorter tail, and a somewhat weaker bill, while they agree with *E.erythronotos* in many details of plumage pattern (extensively red rump, black lores and, in *E.perreini*, black chin, and red flanks in *E.perreini thomensis* Sousa), rather broad tail, voice, and rather more arboreal habits than in most other members of the genus *Estrilda*. They differ from *Lagonosticta* in that the sexes are *alike* in colour (in *Lagonosticta* at most a close *resemblance* of the sexes is found) and in that they lack a conspicuously coloured rim of the eyelids as well as (thus agreeing with all other members of the genus *Estrilda* Swains., with exception of the *astrild-rhodopyga-troglodytes* group) a harsh alarm call, which is found in all species of *Lagonosticta* whose calls are known to me, viz. *L.rubricata* (Licht.), *L.rufopicta* (Fras.), *L.senegala* (Linnaeus) and *L.larvata vinacea* (Hartlaub), as well as in *Hypargos niveoguttatus* (Peters) and in *Uraeginthus*; these alarm calls are nearly identical in *L.senegala* and *L.rufopicta*, very similar to each other in *L.larvata* and *Uraeginthus*.

Nests of *caerulescens* and *perreini* are said to have some sort of spout before the entrance; a spout is not present in nests of *Lagonosticta* nor of *Granatina* s.l. In all these respects, however, *perreini* and *caerulescens* agree with *Estrilda*. White spots on the under surface certainly have arisen independently, probably from a more primitive cross-barring, several times in the course of the evolution of the *Estrildinae* and cannot be regarded as pointing to an especially close relationship of *caerulescens* to *Lagonosticta*. Moreover, the inner web of the second primary is not

attenuated in this species as it is in many species of *Lagonosticta* and, to a slight extent, in two species of *Uraeginthus*. I have never seen species of *Lagonosticta* hold fast food (grass heads) by use of their feet as do *caerulescens* and at least some members of the genus *Estrilda* (e.g. *E.melpoda*), nor do the *Lagonosticta* appear to cling to vertical grass stems as voluntarily as do *caerulescens* and the *Estrilda* species; *Lagonosticta* appears to take most food from the ground. While all this makes me believe that *caerulescens* and *perreini* are rightly placed in *Estrilda* (subgenus *Glaucestrilda* Roberts), the superficially similar species *larvata* (incl. *vinacea* and *nigricollis*) certainly belongs with *Lagonosticta*, showing all the above mentioned characters of that genus.

There is another similar species in Africa, *cinereovinacea*, which, I believe, either should be placed in *Cryptospiza* Salvadori, together with its somewhat intermediate relative "*Clytospiza*" *dybowskii* (Oustalet), or should be treated as representing a special genus, *Euschistospiza* Wolters 1943, comprising *cinereovinacea* and *dybowskii*. There is a slight possibility that *caerulescens* and *perreini* cou.d be derived from an ancestor that was closely allied to *Cryptospiza cinereovinacea* (Sousa), and it is a pity that we know nearly nothing about the habits of this species, which, in spite of its well developed outermost primary, does not seem to be so very close to *Clytospiza monteiri* (Hartlaub), with which it is often united in one and the same genus. It may be mentioned here again, that "*Estrilda*" *subflava* has nothing to do with *Estrilda*, but is a rather close relative of the Indian species *Amandava amandava* (Linnaeus) and *A.formosa* (Latham), and is also not very far from *Ortygospiza* Sundevall; it is best placed in *Amandava* Blyth.

On the genus *Coracia* Brisson, 1760

by Mr. C. W. Mackworth-Praed *and* Capt. C. H. B. Grant

Received 17th October, 1956

In the *Bull.B.O.C.* 75, p. 78, 1955, we stated that Vieillot, 1817, first designated a type species for this genus. This was incorrect as has been shown by Mayaud in *Bull.B.O.C.* 76, p. 105, 1956. We agree that Brisson did first mention the Red-billed Chough and that the type species of *Coracia* Brisson, 1760, is *Upupa pyrrhocorax* Linnaeus, Syst.Nat. 10th ed., p. 118, 1758.

This is correctly given in the 1952 B.O.U. *Check List of Birds Gt.Brit. and Ireland*, p. 66.

Lepechin's three Bird Names in his "Descriptio Quorundam Animalium," Nom.Comm.Acad.Sci.Imp. Petrop.14, for 1769, p. 498, 1770

by Capt. C. H. B. Grant *and* Mr. C. W. Mackworth-Praed

Received 29th September, 1956

We have recently had occasion to look into the above. Sherborn (*Ind.Anim.* p. xxxiii, 1902), in his first reference to Lepechin, mentions "Travels (Russice) 1771–1805," in which the names being non-binomial are not given in his alphabetical list.

Sherborn does not give either Lepechin's article in 1770, nor Pallas's in the same work, but on p. 529 of the same volume he gives a reference to Pallas's 1770 article under *Motacilla leucomela*. Sherborn could hardly have seen one paper and not seen the other in the same volume, and yet he does not mention Lepechin or quote his three names.

On pp. 500, 502 and 503, Lepechin gives *Sterna Tschegrava*, *Ardea pumila* and *Motacilla pleschanka*, all of which appear to be bi-nomial and have been properly introduced into nomenclature. Therefore *Sterna tschegrava* Lepechin, p. 500, pl. 13, fig. 2, 1770, antedates *Sterna caspia* Pallas, p. 582, 1770, and *Motacilla pleschanka* Lepechin, p. 503, pl. 14, fig. 2, 1770, antedates *Motacilla leucomela* Pallas, p. 584, 1770.

The type locality of *Sterna tschegrava* is Caspian Sea, and of *Motacilla pleschanka* Saratov, Volga River, southern Russia.

Ardea pusilla Lepechin, p. 502, pl. 14, fig. 1, type locality Caspian Sea, is a synonym of *Ardeola ralloides* Scopoli, 1769, and is so placed by Sharpe in the Cat.Bds.B.M.26, p. 203, 1898.

On *Tchitrea melampyra* Verreaux, in Hartlaub, Orn.Westafr. p. 90, 1857, and *Tchitrea rufocinerea* (Cabanis), J.f.O. p. 236, 1875

by Capt. C. H. B. Grant *and* Mr. C. W. Mackworth-Praed

Received 29th November, 1956

Bannerman, *Bds.Trop.W.Afr.* 4, p. 300, 1936, uses the name *T.melampyra* for the bird from the Gold Coast to Gabon and the mouth of the Congo River, and in a footnote on p. 301 remarks that birds from Gabon and Portuguese Congo would appear to be the same, and places *T.rufocinerea* as a synonym of *T.melampyra*. Chapin, however, in Bds.Belg.Congo, *Bull.Am.Mus.N.H.* 75a, p. 711, remarks that Stresemann has advised him that the type of *T.melampyra* is a representative of *T.viridis* (Müller) "without any distinctive markings"—whatever this may mean.

In consequence Chapin uses *T.rufocinerea* although on p. 724 he states that *T.melampyra* has no white in the wings. He does not place *T.melampyra* in the synonomy of any species or race.

The description by Verreaux is very clear and there is no doubt it was based on an adult female by the colour of the head and the length of the central tail feathers, and it is distinctly stated that there is *no* white in the wings. This latter fact alone rules it out as being *T.viridis* or any race of it.

The type of *T.melampyra* is in the British Museum and it agrees with Verreaux' description, and except for the total length the measurements given by Heuglin are almost identical.

Cabanis' description of his *T.rufocinerea* is very close to that of Verreaux though he gives the head as grey, but no measurements. This type agrees with adult female specimens from Portuguese Congo.

We agree with Bannerman that *R.rufocinerea* (Cabanis) should be placed as a synonym of *T.melampyra* Verreaux, and that the latter is the correct name for the species from the Gold Coast to the mouth of the Congo River, without any white in the wings.

BRITISH ORNITHOLOGISTS' CLUB

REPORT OF THE COMMITTEE

MEETINGS

The Club held eight meetings during the year, including a joint meeting in March with the British Ornithologists' Union. Attendances totalled 428 compared with 423 in the previous year.

MEMBERSHIP

The Committee very much regret to record the deaths during 1956 of Mr. F. J. F. Barrington and Commander A. W. P. Robertson. There were 4 resignations, and 3 members and 1 associate were removed from the list for non-payment of subscriptions. 27 new members and 3 new associates brought the total membership at the end of the year to 216. A new circular letter was sent to members of the British Ornithologists' Union who had joined in recent years and live within reasonable distance of London. The results were very satisfactory. Sample copies of the *Bulletin* with a covering letter have been sent to 734 members of the Union and 222 copies to agents overseas in a further drive to obtain new members.

THE BULLETIN

The *Bulletin* continues to be published promptly on the 1st of the month and the Editor is to be congratulated on the progress made since he took over. There has been a gradual increase in the size of the *Bulletin* from 63 pages in 1950 to 160 pages in 1956, with the addition of half-tone blocks. Outside subscriptions have increased during the year from 64 to 80.

The Committee propose to put before the Annual General Meeting in April a resolution that the Editor should continue in office for a further five years, as they consider it essential that this progress should continue. It is not proposed to alter the Rules.

FINANCE

The Accounts of the Club for the year 1956, presented herewith, have resulted in an excess of expenditure for the year of £34 10s. 4d. compared with an excess of income in the previous year of £17 0s. 3d., a decrease of £51 10s. 7d. While expenditure rose by £128 there was an increase in income of £77.

The principal increase in expenditure was in the cost of printing and distributing the *Bulletin*, which was £110 more than for 1955. There were four causes for this: the addition of 30 pages to the *Bulletin*; the provision of half-tone blocks on art paper in certain issues; an increase of 20 per cent in printing charges for the last four months of the year, and £31 spent on printing and distributing additional copies of the *Bulletin* to members of the B.O.U. and other scientific bodies, to attract them to become members

(*Continued on page 68*)

BRITISH ORNI

INCOME AND EXPENDITURE ACCO

1955 £	EXPENDITURE	£ s. d.	£ s. d.
	"Bulletin" Vol. 76		
	Cost of publication, distribution, including Editor's		
281	Expenses	370 17 9	
64	*Less* Sales	75 8 9	
217		295 9 0	
	Extra copies distributed to other members of B.O.U.	31 4 8	
			326 13 8
31	Notices, etc., for Meetings		41 16 6
29	Postages, Projectionist and Miscellaneous Expenditure		36 7 11
5	Audit Fee		5 5 0
5	Contribution "Zoological Record"		5 5 0
287			415 8 1
17	Balance, Excess of Income over Expenditure, carried down		—
£304			£415 8 1
—	Excess of Expenditure over Income, brought down		34 10 4
87	Surplus for the year carried to General Fund ...		—
£87			£34 10 4

BALANCE SHEET

£		£ s. d.	£ s. d.
	GENERAL FUND:		
	As at 31st December, 1955	1255 13 4	
	Less Deficit for the year	15 1 1	
1256			1240 12 3
	BARRINGTON FUND:		
	Legacy from F. J. F. Barrington, dec'd.		1000 0 0
	BULLETIN FUND:		
	As at 31st December, 1955	72 18 3	
	Received during year	5 0 0	
73			77 18 3
59	SUBSCRIPTIONS 1957 paid in advance		67 9 9
5	SUNDRY CREDITORS		21 11 6
£1393			£2407 11 9

C. W. MACKWORTH-PRAED, *Chairman.*
C. N. WALTER, *Hon. Treasurer.*

We have examined the above Balance Sheet and Income and Expe
accordance there with, and in our opinion correct.

FINSBURY CIRCUS HOUSE,
BLOMFIELD STREET, LONDON, E.C.2.
25th February, 1957.

OGISTS' CLUB

THE YEAR ENDED 31st DECEMBER, 1956

1955 £	INCOME	£ s. d.	£ s. d.
	SUBSCRIPTIONS:		
195	205 Members	215 5 0	
13	11 Associates	11 11 0	
54	Income Tax recovered under Deed of Covenant ...	47 5 6	
262			274 1 6
	ENTRANCE FEES:		
3	26 Members	26 0 0	
—	2 Associates	2 0 0	
			28 0 0
	Donation		15 6
39	INVESTMENT INCOME:		
	General Fund	53 10 11	
	Barrington Fund	24 9 10	
			78 0 9
			380 17 9
—	Balance, Excess of Expenditure over Income, carried down		34 10 4
£304			£415 8 1
17	Excess of Income over Expenditure, brought down		—
70	Sales of "Bulletin" for previous years, *less* Expenses		19 9 3
—	Deficit for the year transferred to General Fund ...		15 1 1
£87			£34 10 4

31st DECEMBER, 1956

£		£ s. d.	£ s. d.
	INVESTMENTS at Cost		
	General Fund:		
	£1,000 4½% Defence Bonds	1000 0 0	
	£100 3% Savings Bonds 1960/70	100 0 0	
		1100 0 0	
	Less Reserve	20 0 0	
1010			1080 0 0
	(Market Value at date £1,078)		
	The Barrington Fund:		
	£1399 11s. 0d. 3½% War Stock		1000 0 0
	(Market Value at date £976)		
1	PROJECTOR, LANTERN AND SCREEN—Nominal Value		1 0 0
1	STOCK OF "BULLETIN"—Nominal Value		1 0 0
63	DEBTORS		1 0 0
318	CASH AT BANK		324 11 9
£1393			£2407 11 9

int with the books and records of the Club and certify them to be in

W. B. KEEN & CO.,
Chartered Accountants.

of the Club in 1957. This expenditure has already brought in 28 new members and 12 new subscribers.

During the year the Club received a legacy of £1,000 from the late Mr. F. J. F. Barrington, F.R.C.S., with no conditions attached to it. In the Balance Sheet this has been called the "Barrington Fund" to perpetuate the name of the generous donor.

The principal gains in income in 1956 were £38 from entrance fees and subscriptions of new members, £15 from the rearrangement of the investments in the General Fund and £24 being the first half-year's income from the Barrington Fund.

The Committee feel that the capital of this bequest should be permanently preserved so that only the income should be available to meet annual expenses. The necessary legal advice is being taken for the creation of an Endowment Fund, to take over this and any future bequests, and a draft of the Trust Deed and other particulars will be circulated to members for their consideration at a Special Meeting in due course. In the meantime, the amount of £1,000 has been separately invested, as shown in the Balance Sheet.

The "Accumulated Fund" has been re-named "General Fund" to indicate that it is for the general purposes of the Club, as distinct from the other funds which are for specific purposes.

ACKNOWLEDGMENTS

The sales of old *Bulletins* amounted to £19 9s. 3d. in 1956 and the thanks of the Club are due to Mr. R. A. H. Coombes for his work in dealing with these sales.

Mr. Gaffney has continued to handle the projector and lantern most skilfully under difficult conditions and the Committee is grateful to Messrs. W. B. Keen & Co. for acting as Auditors.

C. W. MACKWORTH-PRAED.
Chairman.

2 APR 1957

BACK NUMBERS OF THE "BULLETIN"

Back numbers of the "Bulletin" can be obtained at 2/6 each. Applications should be made to R. A. H. Coombes, Esq., Zoological Museum, Tring, Herts. No reply will be sent if parts are not available.

Members who have back numbers of the "Bulletin" which they no longer require, are requested to kindly send them to R. A. H. Coombes, Esq., as above.

DINNERS AND MEETINGS FOR 1957

16th April, 21st May, 17th September, 15th October, 19th November 17th December.

SEPARATES

Contributors who desire free copies of the Bulletin containing their notes should state so on their MS., otherwise these will not be ordered These will be supplied up to a maximum of fifty.

PUBLICATION OF THE "BULLETIN"

Members who make a contribution at a Meeting should hand the MS. to the Editor at that Meeting. As the proofs will be corrected by the Editor, it is essential that the MS. should be correct and either typed or written very clearly with scientific and place names in block letters. The first mention of a scientific name should be spelt out in full, i.e., genus, specific name, racial name (if any), and author. Any further mention of the same name need only have the initial letter of the genus and no further mention of the author.

If no MS. is handed to the Editor at the Meeting, a note will be inserted mentioning the contribution.

BLACK AND WHITE ILLUSTRATIONS

The Committee have decided that in future the Club will pay for a reasonable number of black and white blocks at the discretion of the Editor. If the contributor wishes to have the blocks to keep for his own use afterwards, the Club will not charge for them, as has been done in the past.

Communications are not restricted to members of the British Ornithologists' Club, and contributions up to 1,500 words on taxonomy and related subjects will be considered from all who care to send them to The Editor, Dr. J. G. Harrison, "Merriewood", St. Botolph's Road, Sevenoaks, Kent.

Communications relating to other matters should be addressed to the Hon. Secretary, N. J. P. Wadley, Esq., 14 Elm Place, London, S.W.7.

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BULLETIN

OF THE

BRITISH ORNITHOLOGISTS' CLUB

3 MAY 1957
PURCHASED

Edited by
DR. JEFFERY HARRISON

ZOOLOGICAL SOCIETY

Volume 77
No. 5

May
1957

BULLETIN
OF THE
BRITISH ORNITHOLOGISTS' CLUB

Volume 77
Number 5
Published: 1st May, 1957

3 MAY 1957 PURCH

Annual General Meeting

Chairman: Mr. C. W. Mackworth-Praed

The Sixty-fifth Annual General Meeting of the Club was held at 5.30 p.m. on Tuesday, 16th April, 1957, at the Rembrandt Hotel, Thurloe Place, London, S.W.7. The Minutes of the last Annual General Meeting, held on 17th April, 1956, and the Report and Accounts for the year to 31st December, 1956, were passed unanimously. Mr. C. N. Walter stated that the Inland Revenue had contested the claim for repayment of tax under the Deeds of Covenant and had warned him that as a result of a recent judgment in the Courts they were intending to dispute the Club's right to a reclaim. He further stated that the British Ornithologists' Union had so far not received any repayment for this year, although the Club had been able to obtain their repayment before the decision was made.

Miss E. M. Longfield complimented the editor on the improved standard of the Bulletin and wondered whether it might not be advisable to further enlarge the Bulletin, even though this might involve using some of the Club's capital. Dr. J. G. Harrison pointed out that the size of the Bulletin depended in some measure on the availability of papers and at the present time he did not think that the supply of unpublished papers justified any further increase in the size of the Bulletin, but the matter was kept under regular review.

The following resolution was passed unanimously: "That Dr. J. G. Harrison be elected editor of the Bulletin for a further period to terminate on 31st December, 1961." Mr. C. N. Walter moved and Colonel O. E. Wynne seconded a vote of thanks to Dr. Harrison for his past five years' editorship of the Bulletin. Mr. Walter emphasized the care and attention that Dr. Harrison had shown, not only in arranging the change-over to the new publishers, but in producing the Bulletin promptly on the 1st of each month.

The Chairman moved a vote of thanks to the Auditors, Messrs. W. B. Kean & Co.

Election of Officers

Committee: Mr. J. G. Mavrogordato, C.M.G.
Hon. Treasurer: Mr. C. N. Walter (re-elected)
Hon. Secretary: Mr. N. J. P. Wadley (re-elected)

Committee, 1957

Mr. C. W. Mackworth-Praed, Chairman (1956), Captain C. R. S. Pitman, Vice-Chairman (1956), Mr. C. N. Walter, Honorary Treasurer

(1950), Mr. N. J. P. Wadley, Honorary Secretary (1950), Dr. J. G. Harrison, Editor (1952), Dr. G. Beven (1954), Mrs. B. P. Hall (1955), Miss T. Clay (1956), Mr. J. G. Mavrogordato (1957).

The Annual General Meeting was followed by the monthly dinner.

Chairman: Mr. C. W. Mackworth-Praed

Members present, 28; Guests, 8; Guest of the Club, Monsieur G. Jouanin; total, 37.

Hybrid Mallard X Grey Duck

Mr. B. L. Sage exhibited an example from New Zealand. A paper will appear later.

"A Review of Skull Pneumatisation in Birds"

by Dr. Jeffery G. Harrison

A talk given to the Club on 16th May

Introduction.—Until comparatively recently it was accepted that the skulls of birds, together with the rest of the skeleton, contained air, as an adaptation for flight, to render the bones lighter than they would be if they were airless. Dr. James P. Chapin[1] and Mr. C. M. N. White[2] were the first two ornithologists to point out that not all birds possess fully pneutised skulls, even when in the fully adult stage. This was followed up with a talk in 1948 to the B.O.C., given by Dr. David Harrison and myself,[3] in which we described some of our findings in birds and bats.

Tonight I will review the work which we have done since then on skull pneumatisation. It is based mainly on British species, but includes some allied Middle-eastern species collected by Dr. David Harrison and I in Iraq and a number of highly specialised oceanic and antarctic species collected in 1956 by Captain J. V. Wilkinson, D.S.C., G.M., R.N., while in command of H.M.S. *Protector* in antarctic waters. His efforts on my behalf have been of the greatest possible help to me. Unfortunately his specimens did not include any penguin, a diving group I was most anxious to see, but since his return to Antarctica this year, one has been obtained and I have already seen two excellent X-rays of its skull, taken on board by Surgeon Lieutenant J. H. Kemp, R.N., to whom I am most grateful. I have been most fortunate when working on wildfowl skulls to have been able to examine specimens from all over the world, through the kindness of Mr. Peter Scott and the scientific staff of the Wildfowl Trust—Dr. G. V. T. Matthews, Mr. Hugh Boyd, Mr. J. Beer and Mr. G. Atkinson Willes—who have made available to me large numbers of heads, as has Mr. Philip Wayre from his private collection. This work appears to make it necessary to revise the conception of pneumatisation in birds, and when this is done, in conjunction with the air-sac system and skeletal pneumatisation in general, it seems probable that a new interpretation of functional anatomy will be revealed.

Methods of Study.—Two have been used; dissection and radiological examinations. This is the first time that X-rays have been used in this work, thanks to the most generous co-operation and encouragement of

Dr. Hugh Hay, Ch.B., D.M.R:E., Consulting Radiologist. To obtain suitable X-rays, Dr. Hay found an exposure of $\frac{1}{2}$ second, 50 milliamps, 50 kilovolts, to be the ideal exposure for medium-sized species, such as duck. For larger ones such as swans and pelicans, an exposure of 1 second, 50 milliamps and 54 kilovolts was appropriate. For good results, skulls have to be fresh. Dried, clean skulls give disappointing results, which are largely impossible to interpret. On dissection, pneumatised bone is dotted in appearance and in cross-section is double-layered, the inner and outer tables being joined by bony trabeculae, which give rise to the dots on the external surface. Airless bone is single-layered. On transillumination with a bright light, the differences between the pneumatised and airless parts of most skulls can be easily seen.

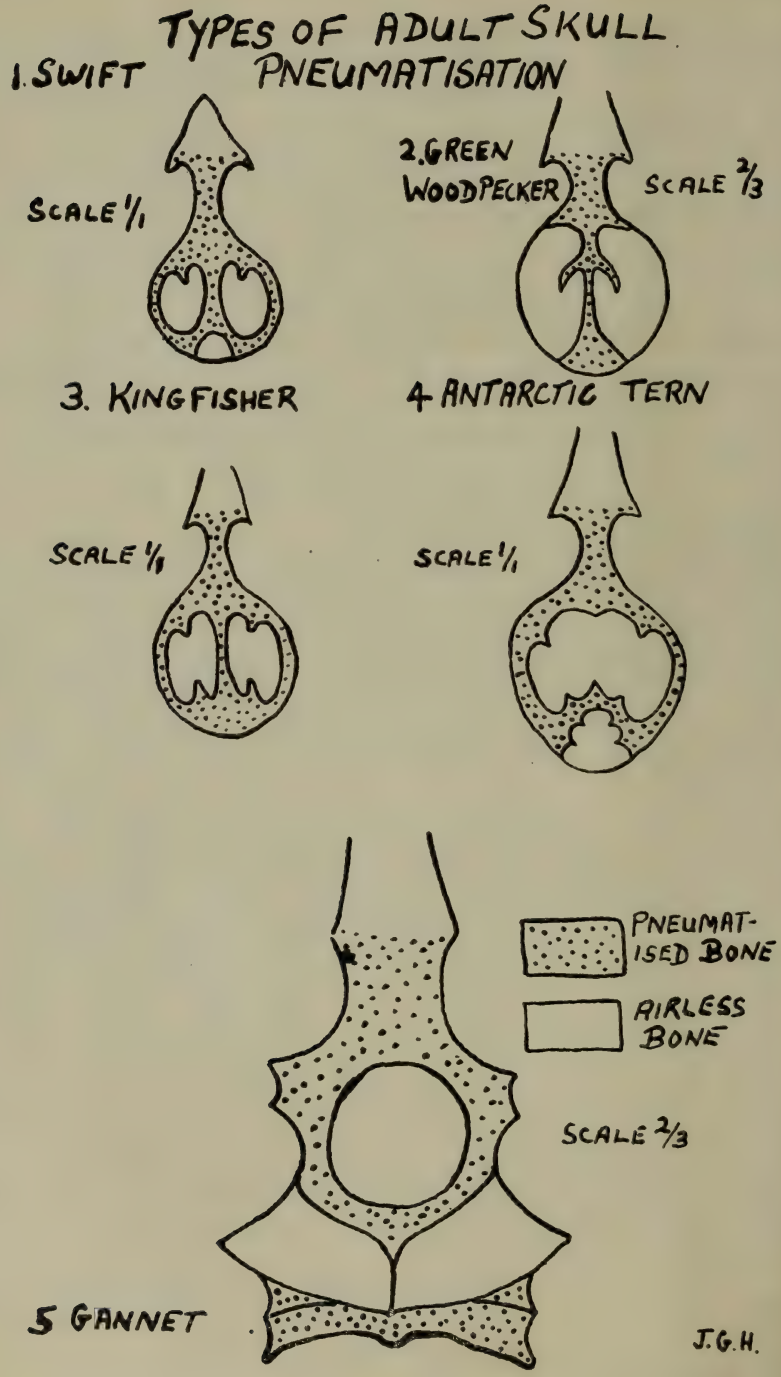
Method of Pneumatisation.—A study of skull pneumatisation in the Wood Pigeon has been published in the BULLETIN.[4] Further investigation on the *Corvidae*, Starling, *Sturnus vulgaris*, and House Sparrow, *Passer domesticus*, reveals that there are several different methods and that the time taken for the process to be completed varies from three months in some *Corvidae* to eighteen months in some Wood Pigeon and varies among individuals of the same species.

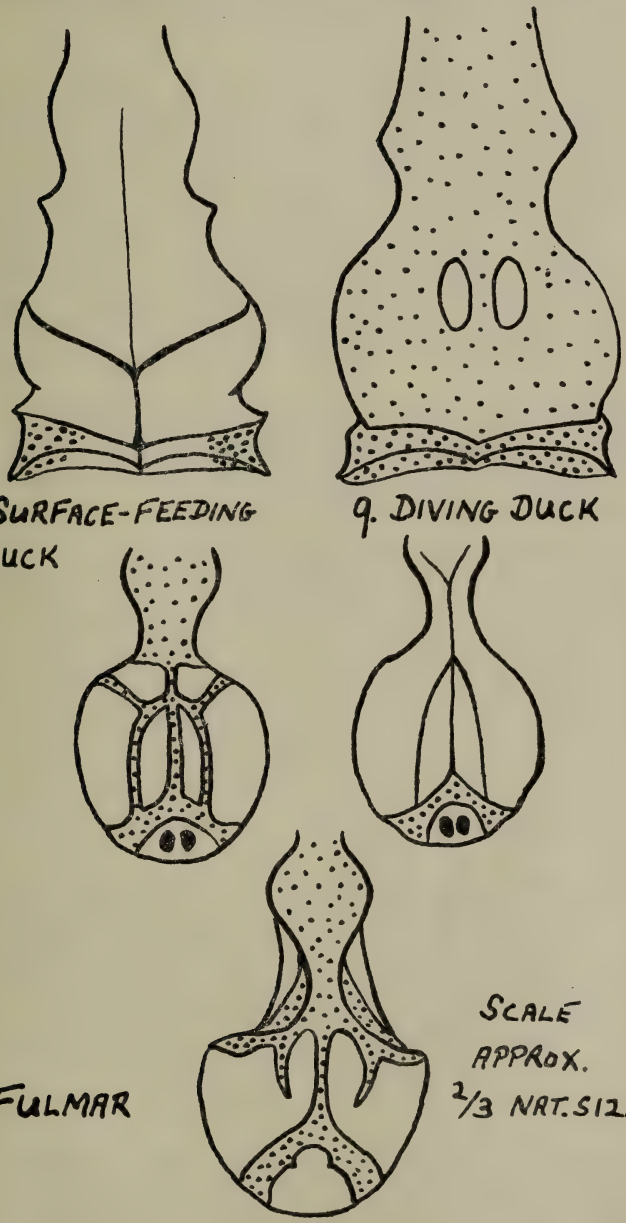
Exceptions to complete Skull Pneumatisation.—If it be accepted as a general rule that the skulls of most birds are fully pneumatised in the adult state, then the following are the exceptions so far revealed. As will be seen, they include many of the groups of birds on the British list, and it is probably nearer the truth to say that of the species I have examined, the *Passeres* and Owls are the only ones which reach full pneumatisation in most cases. This is a somewhat different state of affairs from what has been accepted in the past. For the present I have classified these "exceptions" on a functional basis, until we know more about the true meaning of the findings.

1. "*Swift fliers.*"—Included in this group are the Swift, *Apus apus*, Quail, *Coturnix coturnix*, Partridge, *Perdix perdix*, Red-legged Partridge, *Alectoris rufa*, Pheasant, *Phasianus colchicus*, Grouse, *Lagopus scoticus*, Spotted Sandgrouse, *Pterocles senegallus*, Imperial Sandgrouse, *P. orientalis*, and most of the wading birds, *Charadriiformes*. Young Swifts reach their degree of partial pneumatisation by September and this state remains unaltered into adult life (Fig. I). The other species are rather more variable, but retain larger airless "windows"* in the fronto-parietal areas. Important exceptions to this generalisation are the slow-flying Jack Snipe, *Lymnocryptes minimus*, which frequently reaches full pneumatisation; the Stone Curlew, *Burhinus oedicnemus*, and the near relative of the waders, the Cream-coloured Courser, *Cursorius cursor*, the only specimen of which we have examined having a pneumatised skull, as had an adult Houbara Bustard, *Clamydotis undulata*.[5] In the Antarctic Sheathbill, *Chionis alba*, a sedentary species, thought to be close to the waders. the only two adults examined both possessed small "windows" in the fronto-parietal areas.

2. "*Hammering Birds.*"—All three British Woodpeckers possess large airless areas (Fig. II), this single-layered bone being of a particularly

* So called because these airless areas of bone are semi-translucent in comparison with pneumatised bone.


TYPES OF ADULT SKULL
PNEUMATISATION
1. SWIFT
SCALE 1/1
2. GREEN WOODPECKER
SCALE 2/3
3. KINGFISHER
SCALE 1/1
4 ANTARCTIC TERN
SCALE 1/1
PNEUMATISED BONE
AIRLESS BONE
SCALE 2/3
5 GANNET
J.G.H.



SKULL VAULTS FROM ABOVE

tough structure, with a "mat" appearance. The Nuthatch, *Sitta europea*, a species which does not hammer so strongly, possesses a small "window" in the centre of the vault. Occasional hammering species, such as the Great Tit, *Parus major*, have pneumatised skulls.

3. "*Birds which dive from the air into water.*"—This group does not include the Dipper, *Cinclus cinclus*, the only adult of which I have examined having a pneumatised skull. It includes the Kingfisher, *Alcedo ispida* (Fig. III), the Pied Kingfisher, *Ceryle rudis*, and terns of the following species: Sandwich, *Sterna sandvicensis*, Arctic, *S.macrura*, Common, *S.hirundo*, Little, *S.albifrons*, Antarctic, *S.vittata* (Fig. IV), Elegant, *Thalasseus elegans*, and Inca, *Larosterna inca*. One adult Black Tern, *Chlidonias niger* (a species which seldom dives), possessed a fully pneumatised skull (12.8.42). The skull of a single adult Black Skimmer, *Rynchops niger* (23.4.56), possessed four small "windows" in the fronto-parietal area. Skimmers do not dive, but do catch fish from the surface while in flight.

The Gannet, *Sula bassana*, presents a highly specialised skull, heavily reinforced and streamlined, lacking nostrils and only partially pneuma tised (Fig. V). It is of interest that the nasal area of the skull is pneumatised, in spite of the absence of nostrils.

4. "*Birds which dive from the surface of the water.*"—Included in this group are many of the finest underwater swimmers. The Cormorant, *Phalacrocorax carbo* (Fig. VI) and the Shag, *P.aristotelis*, like the Gannet, also lack nostrils, but possess only minimal pneumatisation in the mastoid area and base of the skull. The vault appears reinforced by a Y-shaped thickening of bone, the arms of the Y running medially from the occipital areas to meet in the mid-line. This supports the venous sinuses internally. Largely identical skulls are found in the Red-throated Diver, *Colymbus stellatus*, the Black-throated Diver, *C.arcticus*, the auks, *Alcidae*, and grebes, *Podicipidae*—a good example of parallel evolution.

Special mention must be made of the Peruvian Pelican, *Pelecanus occidentalis* (21.4.56, male adult), a member of the Order *Pelicaniformes*, which also includes the Cormorants. Unlike the latter, this pelican possesses an almost fully pneumatised skull (Fig. VIII) and the whole of the superficial fascia of the body and lower neck is aerated, exactly similar to feel as is "surgical emphysema" in humans (when air escapes from the lungs and permeates the superficial tissues). The Peruvian Pelican when fishing "hurtles headlong . . . and strikes the water with a vast resounding splash" seldom disappearing below the surface (Murphy, *Oceanic Birds of South America*, Vol. II, p. 825)—hence the value of a bodily air cushion! It would be interesting to compare this with a tropical diving pelican.

The X-rays of an adult Gentoo Penguin, *Pygoscelis papua*, show only minimal pneumatisation in the mastoid area, a fact which I shall have to confirm by dissection later. This species is a magnificent under-water swimmer. "They swim extremely fast, remaining below the surface except when they leap out porpoise-like, giving an audible gasp for air—to be gone again within the twinkling of an eye" (Murphy, loc. cit., Vol. I, p. 383).

4a. "*Wildfowl.*" Swans, geese and duck form a subsection of Group 4, i.e. the divers. Most ducks and geese can dive and swim well under water and often do. Swans feed with their heads submerged to the full length of the neck, sometimes upending like a dabbling duck and are capable of diving, usually in the face of danger (Delacour, *Waterfowl of the World*, Vol. 1, p. 58).

Skulls of swans, geese and dabbling duck conform to the definite pattern of pneumatisation (Fig. VIII), the pneumatised bars traversing the vault forming a type of supporting structure which is represented by thickened ridges of bone in the earlier stages, along which air cells subsequently develop. This does not happen in the true diving duck, by which I mean ducks which regularly dive for food (Fig. IX). In these species, air is confined to the mastoid areas and base of the skull, only occasionally being present in the nasal area, the supporting ridges also being present. This is a further example of parallel evolution with the species in Group 4. There is the important difference, however, in that diving duck have nostrils.

The development of the nasal apparatus in diving duck is highly specialised, particularly in the scoters, with their large air spaces within the upper mandible, which run upwards to come into direct apposition with the orbit anteriorly. The highly developed cartilaginous turbinate apparatus requires further research. Other diving duck have similar nasal structures, notably among those I have been able to study, the Maccoa Duck, *Oxyura jamaicensis maccoa*, Scaup, *Aythya marila*, Tufted Duck, *Aythya fuligula*, Pochard, *Aythya ferina*, Goldeneye, *Bucephala clangula*, Barrow's Goldeneye, *Bucephala islandica*, and the Eider-Duck, *Somateria mollissima*. Both the Goldeneyes are also remarkable for the highly developed "sinuses" which they develop in adult life and which cover some two-thirds of the vault of the skull, the function of which is quite unknown at present. Mr. Philip Reading, M.S., F.R.C.S., to whom I showed the X-rays, has suggested the possibility that they may act as a reservoir of air, to be used when diving. The "saw-bills," *Mergus*, while conforming to stream-lining principles also possess highly developed nasal apparati.

The Falkland Flightless Steamer Duck, *Tachyeres brachypterus*, possesses a most interesting skull, largely characteristic of a diving duck. Placed by Delacour (*Waterfowl of the World*, Vol. 1) tentatively near the *Tadornini* (Shelduck), they are expert diving duck. If Delacour is right, then this Steamer Duck is another example of parallel evolution, the skull being quite unlike that of the Shelduck, *Tadorna tadorna*, which conforms to the geese-dabbling duck types.

5. "*The Tubenoses.*"—Judging from the four species so far examined (Fulmar, *Fulmarus glacialis*; Wilson's Petrel, *Oceanites oceanites*; Leach's Petrel, *Oceanodroma leucorrhoa* and the Cape Pigeon, *Daption capensis*), these birds possess large areas of non-aerated bone and a rather complicated pattern of pneumatisation (Fig. X). The habits of the group of "Tubenoses" makes their functional classification difficult until many more species have been examined. Albatrosses have been estimated to fly at 60 m.p.h. (Fisher and Lockley, *Sea Birds*, p. 179), while "all

Tubenoses are good divers, but do not remain long under water or dive deep'' (*Sea Birds*, p. 81).

6.—In conclusion, a few species have been discovered which appear to retain ''windows'' in adult life, but which require study. This includes the Heron, *Ardea cinerea*, Night Heron, *Nycticorax nycticorax*, Bittern, *Botaurus stellaris*, Flamingo, *Phoenicopterus ruber*, the gulls, *Laridae*, and the skuas, *Stercorariidae*.

Discussion.—In any discussion at this stage, it must be pointed out that a great deal of work remains to be done, before sufficient groups have been studied to draw any final conclusions. This review is but a pause for reflection and the many omissions are because I have had no opportunities to study a wide enough range of species.

The outstanding fact so far appears to be the many examples of parallel evolution towards the same type of skull in otherwise unrelated species, and conversely, the very different skulls in closely related species (Snipe, Jack Snipe; Cormorant, Peruvian Pelican; Shelduck, Falkland Flightless Steamer Duck, etc.). On this alone, it would seem reasonable to presume that some underlying function is served.

There seems to be a common factor among those species which dive, that skull pneumatisation is diminished; the diminution varying directly with the efficiency of the species as an underwater diver. It may be significant that it is the naso-frontal areas of pneumatisation which are obliterated in the finest divers, with the notable exception of the Gannet, which has no nostrils. The reasons for this are obscure. Air within the skull would presumably be subjected to underwater pressure changes when diving, and the lack of pneumatisation may be an adaptation to overcome unpleasant effects from this. Common Scoters are said to dive to feeding grounds 60 feet below water, so that the effects of compression would be quite considerable, as is shown by the following table, quoted from *Deep Diving and Submarine Operations*, by R. H. Davis, showing the volume to which 120 cubic feet of free air would be reduced to at different pressures.

Depth	*Positive Pressure*	*Absolute Pressure*	*Volume*
Surface	0 lb. per sq. inch	1 atmosphere	120 cu. ft.
33 ft.	14.7 lb. per sq. inch	2 atmosphere	60 cu. ft.
66 ft.	29.4 lb. per sq. inch	3 atmosphere	40 cu. ft.

Another factor which may be significant is skull buoyancy, for a fully pneumatised skull would tend to rise when submerged, which would be a disadvantage when feeding. In contradiction to this, the two species of Goldeneye are very different to all other diving duck examined. They have the largest heads, relative to their size, of all diving duck and the presence of the large air sinuses over the dome of their skull must also play a part in skull buoyancy. The function of the complicated nasal apparatus in diving duck will also have to be correlated with this, as will the absence of nostrils in the *Pelicaniformes*. It seems possible that the nasal apparatus in diving duck may play some part in underwater balance or as a depth indicator, the air spaces flooding according to the degree of water pressure. At present we have no knowledge as to whether the bird is capable of exercising any voluntary control of this.

The fact that Woodpeckers have skulls with large airless areas suggests that this type has evolved in these species to withstand the effects of jarring from repeated hammering. Dr. Hay has suggested that this type of skull is heavier than a fully pneumatised one and is therefore a more effective hammer. The shape of the skull of the two Spotted Woodpeckers is more rounded than that of the Green Woodpecker, which does less hammering This raises the problem of the skull as a purely mechanical structure. Mr. J. G. Tatham, A.M.I.C.E., with whom I discussed this, tells me that from the point of view of both lightness and strength combined, the double layered, pneumatised bone with connecting trabeculae is the most efficient structure there is. Also, he considers that the thickened ridges and pneumatised bars in the vaults of many diving species, particularly wildfowl, act as a supporting structure for the vault.

Finally, why should birds which fly at high speeds also possess "windows"? In our first talk to the B.O.C. we put forward a theory that this may be an adaptation to neutralise the damaging effects of hydrostatic forces acting on the blood—in other words to avoid "Black-outs" and "Red-outs." What function do the air-sacs perform? It is known that as a result of their presence all the air passing through the lungs is tidal air, and when inflated, the body is relatively lighter. But the theory that air is present in the bones of birds to make them lighter now seems to require modification in some species and so may our ideas on the air-sacs. It is worth repeating here the suggestion made by Dr. James M. Harrison that the air-sac system in birds corresponds closely to an internal "G-suit," now used so successfully to combat blood pressure changes and blood pooling effects.

Summary:

A preliminary review of skull pneumatisation shows a high degree of functional adaptation of skull structure, the significance of which requires much further research. The possibility of being misled in interpreting such purely adaptive modifications as providing evidence of phylogenetic evolution and of using such as taxonomic criteria is stressed.

Acknowledgements:—

I would like to express my thanks to all those mentioned in the text who have helped in so many ways. In addition, Mr. Gerald Finnis has laboriously and beautifully prepared many skull specimens for me and Mr. David Jones has obtained many wildfowl for these researches. Mr. Reading, Dr. Hay, Dr. James Harrison and Dr. David Harrison have all read through the paper and made a number of helpful suggestions.

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On A Rough-legged Variety of the Common Buzzard *Buteo buteo* (L.)

by Mr. Alfred Hazelwood and Mr. Eric Gorton

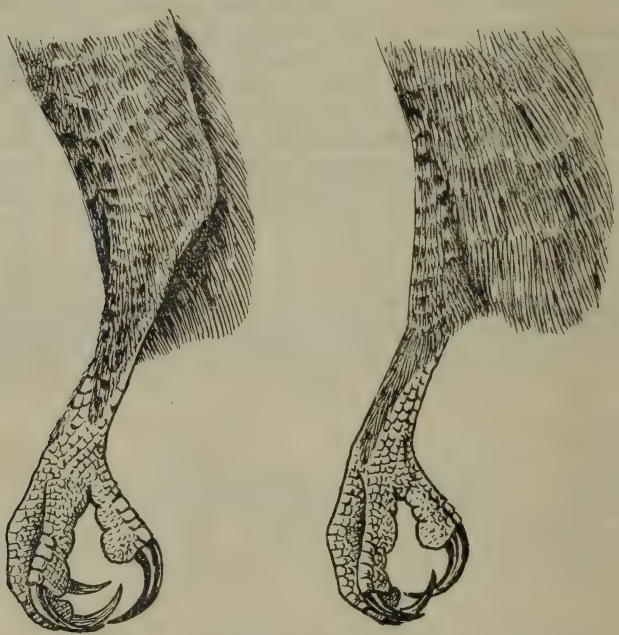
Received 15th December, 1956.

A specimen of *Buteo buteo* which we have recently been privileged to examine, from a private collection, has the tarsi feathered to an extent which recalls the leg of *Buteo lagopus* (Pontoppidan).

The feathering emanates from the front portion of the reticulate scaling on both aspects of the tarsi, the outer feathering reaching down to the toes while the inner ends in a single feather about an inch above the distal end of either tarsus.

In all other respects the bird resembles a typical *Buteo buteo* of a rather dark phase, fairly common in Scotland whence the bird originally came.

We can discover no other record of this apparently boreal characteristic in the species and it would be interesting to speculate as to whether its manifestation is due to a mutating gene or to some rare recessive one perpetuated from a rough-legged stock. The former seems most likely.



a. Inner. *b.* Outer aspect of tarsus of variant Buzzard.

The colouration of Feral Pigeons in Inner London

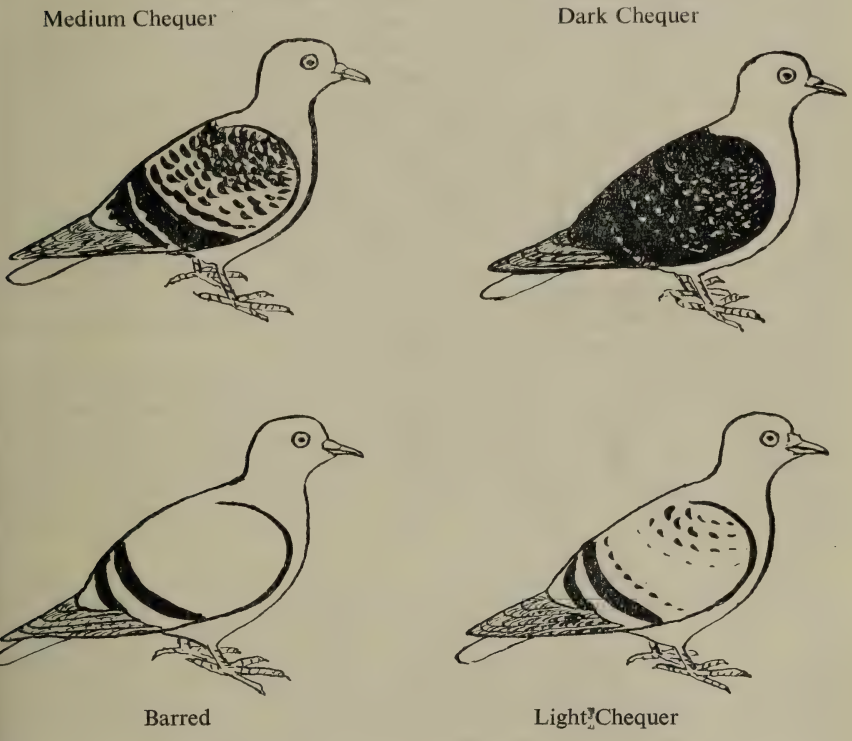
by Mr. Derek Goodwin

Received 29th October, 1956

Since October 1946 I have paid considerable attention to the Feral Pigeons *Columba livia* Linn. in inner London. Most of my observations have been made in Trafalgar Square, St. James' Park, St. Paul's, Victoria

Station, Hyde Park, Regent's Park, Waterloo Station, Hungerford Bridge, South Kensington and many of the streets adjacent to or connecting these places. Notes were kept on all the colours and colour-patterns seen and their relative abundance but I found it impossible to attempt to count and classify large groups of birds at any of the bigger feeding centres. I did, however, keep a note of the exact colouration of 371 "driving" pairs observed in 1955 and 1956. I also studied such photographs as I could obtain, including several early ones that were published in the *American Geographical Magazine* in 1926. These latter included one of many Feral

Four common patterns in Feral Pigeons



Pigeons on Boston Common, which shows that at the date it was taken chequered birds predominated and not barred ones as was stated (? correctly) by Townsend (1915) to have been the case a decade or so earlier. I am far from convinced that there has been a relatively recent increase in the percentage of chequered and dark-winged or "velvet" individuals, as against barred (Rock Pigeon pattern) in the blue colour as Meinertzhagen (1954) suggests. Their abundance, not only in towns, but formerly in many farm-lofts and manorial dovecotes, suggests that under such conditions they may have some selective advantage. It is more likely, however, that under natural conditions the barred birds have a selective advantage over the chequered ones. Petersen à Botni and Williamson (1949) state that in the Faeroes chequered Rock Pigeons die

in proportionately greater numbers in hard winters. Chequering is dominant over barring in its homozygous state (Levi 1940). Petersen à Botni and Williamson consider, however, that in the Faeroe population it is the barred birds—or some of them—which are heterozygous and carry the factor for chequering and the evidence they give suggests, though it does not prove, that this is the case.

The commonest colour among London pigeons is "blue." The only other colours that are at all abundant are "black," "dominant red"and "grizzle." In both blue and dominant red, individuals with self-coloured black or reddish-brown wings (at least those portions of the coverts and secondaries that are visible) are about a third as numerous as barred (Rock Pigeon pattern) ones and chequered (spotted black and bluish-grey or reddish-brown and creamy-grey) individuals are more numerous than barred or "velvet" ones. The dull slaty black, often with the wing bars showing in somewhat darker tone, like the spots on a black panther, usually seen in black feral pigeons should probably be considered as simply the darkest form of the "blue" or "blue-black" pattern series (Levi 1940). Although grizzle pigeons, with their plumage all streaked and intermixed with white (see Goodwin 1954 for description of colours), are often striking in appearance, grizzle, considered genetically, is a pattern, not a colour. Thus we see that the only colours and patterns that are at all numerous among feral pigeons in London (and so far as I have observed elsewhere as well) are those which, in the homozygous state, are dominant over the wild pattern and/or colour.

Recessive colours, silver (the dilute of blue), dun (the dilute of black), yellow (the dilute of dominant red) and recessive red do, however, continue to occur, as does at least one recessive pattern—barlessness. Individuals of these colours, and barless blues and reds, are rare but an hour or two spent watching in Trafalgar Square or some other place where large numbers of feral pigeons come and go will seldom fail to discover a few individuals of such colours.

Blue pigeons in which the black markings on the wings are replaced partially or almost completely by dark chestnut, are not uncommon, but such "bronze" or "kitey" birds are very easily overlooked. There is also much variation seen in the shade of blue. Birds of a dingy bluish-grey ground, with the black markings rather indistinct and (usually) with reddish instead of grey or white skin encircling the eyes and flesh coloured or dusky instead of black bills are not uncommon and seem most often (but by no means always) to be females. Such birds are called "Smokies" or "Smokey-blues" by pigeon fanciers. I have not, however, tried to separate them from the more normal blues, with which they intergrade.

All colours are equally liable to show partial albinism, except for bronze birds, in which it is particularly common. Partial albinism is relatively more frequent in females than in males, just as—at least in the "blue" series—males tend to show a greater degree of melanism than females. The distribution of the white areas commonly met with shows the "raw material" from which the more or less "fixed" white markings of many breeds of fancy pigeons have been derived. I have even seen one feral bird entirely black with a patch of white markings on either shoulder like a Rosewing Mottled Tumbler. Nothing about this bird suggested

COLOURS AND COLOUR-PATTERNS OF 371 ♂♂ AND 371 ♀♀ FERAL PIGEONS IN INNER LONDON

Colours	*Patterns*									
	Barred		Light Chequer		Medium Chequer		Dark Chequer		Dark-Winged or Velvet	
	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀
Blue	80	81	6	13	77	95	90	62	29	25
Bronze	—	—	—	—	—	1	—	—	—	—
Silver	—	1	—	—	—	1	—	—	—	—
Dominant Red	6	—	1	—	4	1	5	2	3	3
Blue, showing Partial Albinism	7	10	1	1	10	18	8	19	1	1
Bronze, showing Partial Albinism	—	—	—	—	—		—	1	—	1

Other Colours and Patterns

Entirely White, except for Blue Tail		Entirely White		Black*		Black, showing Partial Albinism		Grizzle*	
♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀
2	3	—	1	34	27	2	2	3	2

* See Text

STATUS OF COLOURS OF FERAL PIGEONS OBSERVED IN INNER LONDON BETWEEN OCTOBER 1946 AND OCTOBER 1956

Blue
Very common, all patterns (except barless) abundant.

Bronze
Fairly common, easily overlooked.

Silver
Uncommon, only a few ♀♀ seen.

Black
Common

Dun
2 ♀♀ only seen

Dominant Red
Fairly common in all patterns, barless rare but less so than barless blues.

Yellow
1 ♀ only seen.

Recessive Red
Rare, a few only seen, all ♀♀.

Grizzle
Fairly common.

Pink-headed Blue
5 only seen.

Partial Albinism
Common in all colours, but seems proportionately more so in bronze and Grizzle birds.

"Rosewing" Mottle
1 ♀ only seen.

that it had any tumbler blood in it and despite the rarity of such a distribution of white I am of the opinion that it was a spontaneous mutation.

I have seen five feral pigeons in London of a colouration that, so far as I am aware, has not been described in domestic pigeons. These birds were blue chequers and much resembled a "smoky blue chequer" in appearance but were paler and less dingy than most smokies are and had their entire heads of a soft mauvish pink, almost identical with the colour seen on the breast of a Wood Pigeon *C.palumbus* Linn. In two of them this pinkish colour was noticeable and striking, in the other three it was more in the nature of a strong suffusion over the normal grey. Four of these birds were seen in Regent's Park and the fourth in St. James' Park. They were all of similar type and may well have been closely related, or even bred from the same pair. All appeared to be females, so probably this character is recessive and sex-linked. It is an extremely interesting one since this soft, glossless mauve-pink colouring, so widespread among pigeons of many genera, would appear to occur only rarely in feral and domestic *C.livia* and is, of course, quite unknown in wild forms of the species. Indeed it is just possible that these pink-headed London birds, may be the first examples of a new colour mutation.

The sketches, showing the pattern on the wings, are merely intended to amplify the written descriptions. They have no pretensions to art or detailed accuracy.

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On the Breeding of *Sterna vittata tristanensis* Murphy off the coast of Cape Province, South Africa

by Miss M. Courtenay-Latimer

Received 12th December, 1956

Vincent, in his recent *Check List of the Birds of South Africa*, 1952, p. 33, suggests that the Tristan da Cunha race of the Kerguelen Tern, *Sterna vittata tristanensis* Murphy, occurs within South African limits, stating that it is almost certainly a winter migrant to South African Coasts. The nominate race, which breeds on Kerguelen and on other islands in the southern Indian Ocean, is also recorded as occurring in South African waters in the non-breeding season both by Vincent, *loc.cit.*, and by Roberts, *Birds of South Africa*, 1940, p. 119. No race of this wide ranging tern has as yet been recorded as breeding on the coasts of southern Africa, but I hope to show below that the Tristan race, *S.v.tristanensis*, does in fact breed on islands off the coast of Cape Province.

During the months of November and December, 1936, I carried out survey work on the breeding of Sea Birds at Bird Island, Algoa Bay, Cape Province, identifying flocks of *Sterna caspia* Pallas, *Sterna bergii* Lichtenstein, *Sterna dougallii* Montagu, *Sterna hirundo* Linnaeus, *Sterna fuscata*

fuscata Linnaeus, and *Sterna macrura* Naumann. Of these I found *Sterna caspia* Pallas and *Sterna bergii* Lichtenstein breeding together; on 10th December, 1936, I banded 28 of these young birds. Subsequent visits resulted in the positive identification of non-breeding remaining flocks of the Palaearctic migratory terns *Sterna hirundo* Linnaeus and *Sterna macrura* Naumann, and of the locating of an unidentified tern, which superficially resembled *S.hirundo*, and which I found breeding alongside the graceful *S.dougallii*. In an effort to clear up the doubt in mind as to the correct specific identity of the strange tern species I ringed 40 chicks from the mixed colony on 25th August, 1937, and 25th August, 1940. A sub-adult bird bearing one of my rings, No. 14 (banded 25th August, 1937), was recovered at Cintza, near East London, on 15th January, 1938, and it has been identified by Dr. R. Cushman Murphy of the American Museum of Natural History, New York, as an example of the Roseate Tern. On 26th January, 1941, another of my ringed terns was recovered, this time under rather exceptional circumstances. On 20th January, 1941, off the coast of St. Helena, a tern bearing my ring No. 24 (banded 25th August, 1940) flew aboard the SS. *Durban Castle* and was taken by the captain of the ship, Captain J. Norman. The bird and the ring were shown to the late Dr. E. L. Gill, then Director of the South African Museum, Cape Town, who referred the matter to me. This skin, which is now in the ornithological research collection of the East London Museum, has been identified by Dr. Murphy under date 29th May, 1956, as being a sub-adult example of his *S.v.tristanensis*. This fortunate ringing recovery shows that the Tristan race of the Kerguelen Tern does breed on certain of the seabird islands off the cost of Cape Province, South Africa.

In addition to the discovery of the breeding of *S.v.tristanensis* on Bird Island, Algoa Bay, the location of sizable breeding colonies of *S.dougallii* alongside those of the former species is noteworthy. The correct racial identification of the austral African population of *S.dougallii* is still a matter for conjecture. Peters, *Check List of Birds of the World*, vol. ii, 1934, p. 334, gives the range of nominate *S.dougallii* (type-locality: Cumbrae, Firth of Clyde, Scotland) as the western and eastern coasts of the North Atlantic from Sable Island to Long Island, in Florida, Bermuda, the Bahamas, British Honduras, the Lesser Antilles and Aruba Island; in the British Isles, islands off Jutland, coast of Brittany and coast of Tunisia. It is stated to winter as far south as South Africa. *S.d.arideensis* Mathews has been described as a breeding race from the Seychelles and other archipelagos in the western Indian Ocean, but Peters, *loc.cit.*, p. 335, is of the opinion that this race is perhaps not distinguishable from *S.d.bangsi* Mathews, described from Foochow, China. Breeding material of the South African population should be compared with topotypical examples of *S.d.dougallii*, *S.d.arideensis* and *S.d.bangsi*, and I have already taken steps to acquire this fundamental research material.

On the status of *Mirafra rufipilea* (Vieillot)

by Capt. C. H. B. Grant *and* Mr. C. W. Mackworth-Praed

Received 29th November, 1956

In the *Bull.B.O.C.* 75, p. 33, 1955, we discussed this name, agreeing with those authors who consider it to be indeterminate. In the references we

gave we inadvertently failed to include that of Mr. J. D. Maconald's article "Notes on the Taxonomy of the Clapper Larks of South Africa," *Ibis*, 94, p. 629, 1952, where the author on pp. 630 and 631 gives his reasons for accepting this name, giving the type locality in the Maltahohe district, South-West Africa. This article we had studied, but since 1952 we have also studied Levaillant's Travels and laid them down on a modern map and this shows that Levaillant went east from the Cape to the Great Fish River in eastern Cape Province and was never farther north than Graaf Reinet and the Sneeuw Bergen. On his northern trip he was in the south-eastern areas of South-West Africa as far north as about the latitude of Keetmanshoop. We wished to point out that Levaillant was not in the area where the red race occurs and that his plate 198 in *Ois d'Afrique*, 4, 1805, does not agree with the races from the western and southern side of Cape Province, that is to say, those races listed as (1), (2) and (3) in Mr. Macdonald's paper, nor with those in South West Africa. We cannot therefore accept Vieillot's *Mirafra rufipilea* as determinable on present knowledge.

The "White Wing-barring" and other Variants in the Carrion Crow and Rook

by Dr. James M. Harrison

Received 26th January, 1957.

The condition of "mottling" which may be either whitish, greyish or even greyish-white in local populations of the Rook, *Corvus frugilegus* Linnaeus has been discussed fully in various communications in the Bulletin (*antea* 69:117–8 and 70:7 and 18–9). Recently Mr. Bryan Sage has recorded a similar variant in the Carrion Crow, *Corvus corone corone* Linnaeus (*antea* 76:13–4).* Only the wing of the specimen, which had been shot at Cotherbridge, in Worcestershire, was available for examination and was described as having "a wide brownish-white bar extending across both webs of most of the primaries, secondaries and greater wing-coverts." The bars are stated to be subterminal. Further discussion by the same author upon these interesting variants are to be found in his paper (*antea* 76:25–28).

Evidence is accumulating to show that these "mottled" and "barred" corvines are in all probability not uncommon and since the above communications were made, I can call to mind a family party with three young Carrion Crows with white barred wings seen at Barksore in north Kent in the winter of 1951. In the summer of 1956 another family of the same species had three young birds with white wing-bars at Seal, Kent. Two were obtained and both were anatomically sexed as males. Mr. Sage also possesses a specimen which he kindly allowed me to examine; this bird is a female with white wing-barring, obtained at Northaw, in Hertfordshire, so that the last three specimens mentioned show that the condition is not sex-linked. A further instance, which was observed by Mr. Musson near Borstal, Kent, in October 1956, has been reported to me, while in *The Field* (24th January, 1957) another example is recorded by Mr. Michael

* A case of "mottling" has now been recorded in a Jackdaw, *C.monedula spermologus* Vieillot (*antea* 77:55), further evidence of presumed recessive patterning in a species of the genus *Corvus*.

Falkiner from Gloucestershire. On 13th March, 1957, Mr. D. B. Jones shot a first summer female near Kemsing, which showed faint barring of both wings. All these instances indicate a fairly widespread distribution.

The brown plumage referred to by Mr. Bryan Sage (*antea* 76:14) may well be occasioned under avicultural conditions, by dietary deficiencies, etc., but quite often and normally first summer individuals of Carrion Crows, Rooks and Jackdaws retain some juvenile flight feathers, tail feathers and body plumage and such are of course, faded brown, often almost bay coloured, and show much wear, as is to be expected.

Apart from this physiological condition, these "mottled" and "barred" variants are not easy to explain. As the condition is one affecting *pattern*, and not a haphazard pattern either (such as occurs in irregularly pied individuals, which are conveniently classified as partial albinos) it would seem that they cannot be regarded as in any way analagous to frank absence of pigment, either total or partial. Such aberrations may therefore, with wider experience, be found to have a greater importance.

It is significant that the "normals" of these aberrant palearctic *Corvidae* are all either black or grey-black iridescents (*Corvus*) or pied iridescents (*Pica*), and if one may, by an elasticity of interpretation, consider *C.monedula* and *C.corone cornix* as broadly "pied" forms (and this is certainly true of the eastern race *C.c.capellanus*), then the possibility of black and white patterned variants in certain *Corvidae*, which are normally black, is not a remote possibility.

A close study of this patterning in individuals is very desirable. It must of course be genetic and pied patterned genes must have come from somewhere in the long evolutionary ancestral history of the corvine forms.

Although placed in different genera, no one would seriously dispute that phylogenetically *Corvus*, *Garrulus*, *Cractes*, *Pica*, *Cyanopica* and *Nucifraga* have very close affinities and a critical study of aberrations in this group may well one day disclose important contributory evidence of their evolutionary history. That these "mottled" and "barred" variants are purely fortuitous and without evolutionary significance is, in my opinion, most unlikely.

The whole issue of the "aberrant specimen" has been deliberately ignored by those whom the late Mr. B. W. Tucker referred to as "the tidy minded taxonomists," and it was only by the awkward presence in the British Isles, as breeding individuals, of the so-called "Sykes" ' Wagtail, which after mature and careful study, was shown to be a variant of the Yellow Wagtail, *Budytes flava flava*, that the importance of variants generally came to be recognized. Such specimens are of paramount importance as study material.

Note on the Eggs of the Black-bellied Bustard *Lissotis melanogaster* (Rüpp.)

by Captain C. R. S. Pitman

Received 21st January, 1957.

According to M-Praed and Grant, *Birds of Eastern and North-Eastern Africa*, Vol. 1, p. 325, the eggs of typical *Lissotis m.melanogaster* (Rüpp.) measure "about 63 x 52 mm. as a rule, but some are much smaller." From the information available this is too large. Of 27 eggs of which there

are published records or of which I have the measurements, only three are as large or larger than these dimensions, 63 x 52 mm. (Kenya: Jackson, *Game Birds of Kenya and Uganda*, pp. 201–204), 65.4 x 48.2 mm. (Uganda, personally collected) and 65.0 x 50.0 mm. (Bannerman, *Birds of Trop. W. Africa*, Vol. II, p. 68). The dimensions 64 x 52 mm. recorded by Jackson (*Birds of Kenya Colony and Uganda Protectorate*, Vol. 1, p. 330) are for the same egg which he quotes as 63 x 52 mm. in *Game Birds of Kenya and Uganda*, these latter being correct. Maximum measurements are *65.4* x 48.2 mm. and 55 x *53.1* mm.: minimum are *54* x 48 mm. and 59.6 x *47.5* mm. The average of these 27 eggs is 59.5 x 49.4 mm. In regard to clutch size, in two cases only out of twelve nests found in Uganda did it consist of two eggs: in Kenya, Nyasaland and Northern Rhodesia c/1 seems to be usual. From West Africa there is little information available, but what there is (Shuel, *Ibis* 1938, pp. 233–234) suggests that c/2 may be normal in Northern Nigeria, for the six eggs recorded represent 3/2. The southern limit of typical *melanogaster* appears to be the Zambesi to the east and the Cunene river on the west.

South of these rivers, *Lissotis m.notophila* Oberholser which has similar though somewhat plumper eggs, replaces the typical race. The average of 15 eggs which I have either measured or been sent the measurements, or of which there are published records, is 59.5 x 52 mm. Maximum measurements are *63* x *54* mm. and minimum *54* x *49.5* mm. Priest (*Eggs of Birds Breeding in Southern Africa*, p. 34), without offering any conclusive evidence, gives the clutch size as two, though from the inadequate records I have been able to examine single eggs are as common as if not commoner than c/2.

SUMMARY

	Av. egg size mm.	Normal clutch
Lissotis m.melanogaster	59.5 x 49.4	One Eastern Africa; perhaps two—Nigeria
Lissotis m.notophila	59.5 x 52	One or two

A Redshank *Tringa totanus* (Linnaeus) suffering from amputation of one leg

by MR. BRYAN L. SAGE

Received 23rd November, 1956

Instances of waders suffering from the loss of part of one leg have been discussed by Dr. James M. Harrison (*antea* 75:110–113), and Sir Philip Manson-Bahr (*antea* 76:51–52). Both these authors have produced evidence which suggests that in a number of cases these injuries were caused by the bird getting its leg caught in the jaws of a species of clam. This suggestion explains very nicely the reason why so many seabirds and waders are found with such injuries. The waders mentioned by the aforementioned authors comprise the Dunlin *Calidris alpina* (Linnaeus), Curlew *Numenius arquata* (Linnaeus), Grey Plover *Charadrius squatarola* (Linnaeus), Eastern Golden Plover *Charadrius dominicus fulvus* Gmelin, Eastern Bar-Tailed Godwit *Limosa lapponica baueri* Naumann, and the Wandering Tattler *Heterosclerus incanus* Gmelin.

I am now able to add the Redshank to this list. On 18th November, 1956, at the Sandbeach Outfall, Dengie Flats, Essex, I examined a freshly shot bird that had suffered amputation of the left leg, which had been neatly severed about $\frac{1}{8}$ inch below the tibio-tarsal joint. The stump had healed perfectly, and the bird was plump and healthy.

A New Race of *Eremopterix verticalis* from the Makarikari Pan, Northern Bechuanaland Protectorate

by Mr. Michael P. Stuart Irwin

Received 14th January, 1957.

Eremopterix verticalis khama: new race.

Description: Adult male. Differs conspicuously from *E.v.verticalis* (Smith) and *E.v.damarensis* Roberts, in having the feathers on the mantle edged with greyish white, lesser and median wing coverts with broad white edges, more so than in *damarensis*, virtually obscuring the dark centres, greater wing coverts and secondaries also broadly edged with white. Tail blackish brown, tipped and edged with white, first outer tail feather largely white with narrow band of pale brown on inner web. Underparts, forehead and nape sooty black, not blackish brown as in typical *verticalis* and *damarensis*; white patch on crown and ear coverts also clearer white. The great amount of white, especially on the wings and the greyer back at once distinguish this form. Wing 78–84, average 80 mm.

Type: Male adult. Makarikari Pan, northern Bechuanaland. Collected by R. H. N. Smithers, 12th October, 1953. Collectors No. B/31; National Museum Registration No. 20261. C. S. Barlow B.P. Expedition, 1953. Type in the National Museum of Southern Rhodesia, Bulawayo.

Measurements of Type: Wing 79, Tail 45, Culmen 11.5, Tarsus 15.5 mm.

Range: So far only known from the northern fringe of the Makarikari Salt Pan complex.

The adult female differs from the other two described forms in having the mantle generally a pale whitish grey, not buffy, with darker centres to the feathers on the crown and forehead, lesser and median wing coverts only narrowly tipped and edged with white, not buff. Amount of blackish brown in centre of abdomen reduced, flanks clearer white, not tinged with buff.

Material examined of this new form consists of 10 adult males, and 5 adult females.

Remarks

The Type and four other specimens were collected on white sand on the edge of the Makarikari salt pan. The white sands of the Makarikari seem to have had a marked effect on some of the ground frequenting Larks and Pipits that inhabit the area. The pallid *Mirafra apiata nata* Smithers (*Bull.B.O.C.* 75, 1955, pp.29–30) is a case in point as is a pallid form of *Anthus novaeseelandiae* that appears to be restricted to the same association.

At Mumpswe, 15 miles west of Nata, and just north of the Pan, these Finch Larks were very common, coming down to drink in large flocks at a series of small pans on an open plain, arriving usually in the early morning and again in the evenings.

Migrants at the South End of Lake Tanganyika

by Mr. C. W. Benson

Received 28th January, 1957.

Due to the kindness of Mrs. Norah Clark, I have received a female specimen each of *Sarothrura elegans* (Smith) and *Pitta angolensis longipennis* Reichenow (wing 127 mm.). Both were killed at about 10 p.m. on 26th December, 1956, by flying into the lighted windows of Mr. J. H. Venning's house on Chisungu Estate, near Abercorn. The house is at an altitude of about 5,000 feet above sea-level, with a commanding view of the south end of Lake Tanganyika, some twelve miles at the nearest point to the northward. At this particular time, the night was overcast, and shortly afterwards there was rain. Three rails, which from Mrs. Clark's description were undoubtedly *Crex egregia* (Peters), also flew against the windows at the same time, but recovered, and flew away.

The *Pitta* is well known as a migrant, see for example Chapin, *Bds. Belg. Congo* 3, 1953, p. 26. Certainly, too, except perhaps in thickets on the shores of Lake Tanganyika, there is no country suited to its regular occurrence near Abercorn. Presumably the rails were also migrating, and in the case of *Crex egregia* all records from Northern Rhodesia and Nyasaland fall within the period December-May, see respectively checklists by Benson & White (in press) and by Benson (1953).

These occurrences are not isolated, for Benson, *Ibis*, 1956, p. 597, records a *Porzana marginalis* Hartlaub killed near Abercorn at 10.30 p.m. on 31st March, 1954, the house mentioned also being Mr. Venning's. Mrs. Clark has also sent me a male of *Coturnix chinensis adansoni* Verreaux which suffered a similar fate at 9 p.m. on 8th June, 1956, on a still and fairly warm night. Another similarly sized bird, described as light brown and speckled, probably a female of this species, also flew against the window at the same time, but recovered, and flew away.

It is noteworthy that at Kasama, where I have resided since June 1953, no such occurrence has ever come to my notice. Yet there is a population of several hundred Europeans, a number of whom are aware of my interest in ornithology. Kasama is some 100 miles south of Abercorn. The country is relatively flat and monotonous.

Attention may also be drawn to the observation by Benson, *Occ. Papers Nat. Mus. S. Rhod.* 3 (21B), 1956, p. 4, of groups of *Buteo b. vulpinus* (Gloger) moving southward. These observations were also made from Mr. Venning's house. The buzzards were accompanied by a few individuals, apparently of palaearctic breeding species of *Aquila*.

MAY 1957
PURCHASED

BACK NUMBERS OF THE "BULLETIN"

Back numbers of the "Bulletin" can be obtained at 2/6 each. Applications should be made to R. A. H. Coombes, Esq., Zoological Museum, Tring, Herts. No reply will be sent if parts are not available.

Members who have back numbers of the "Bulletin" which they no longer require, are requested to kindly send them to R. A. H. Coombes, Esq., as above.

DINNERS AND MEETINGS FOR 1957

21st May, 17th September, 15th October, 19th November, 17th December.

SEPARATES

Contributors who desire free copies of the Bulletin containing their notes should state so on their MS., otherwise these will not be ordered These will be supplied up to a maximum of fifty.

PUBLICATION OF THE "BULLETIN"

Members who make a contribution at a Meeting should hand the MS. to the Editor at that Meeting. As the proofs will be corrected by the Editor, it is essential that the MS. should be correct and either typed or written very clearly with scientific and place names in block letters. The first mention of a scientific name should be spelt out in full, i.e., genus, specific name, racial name (if any), and author. Any further mention of the same name need only have the initial letter of the genus and no further mention of the author.

If no MS. is handed to the Editor at the Meeting, a note will be inserted mentioning the contribution.

BLACK AND WHITE ILLUSTRATIONS

The Committee have decided that in future the Club will pay for a reasonable number of black and white blocks at the discretion of the Editor. If the contributor wishes to have the blocks to keep for his own use afterwards, the Club will not charge for them, as has been done in the past.

Communications are not restricted to members of the British Ornithologists' Club, and contributions up to 1,500 words on taxonomy and related subjects will be considered from all who care to send them to The Editor, Dr. J. G. Harrison, "Merriewood", St. Botolph's Road, Sevenoaks, Kent.

Communications relating to other matters should be addressed to the Hon. Secretary, N. J. P. Wadley, Esq., 14 Elm Place, London, S.W.7.

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Edited by
DR. JEFFERY HARRISON

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IRCHASED
3 SEP 1957

The five hundred and fifty-seventh meeting of the Club was held at the Rembrandt Hotel, S.W.7, on Tuesday, 21st May, 1957, following a dinner at 6.30 p.m.

Chairman: Mr. C. W. MACKWORTH-PRAED.

Members present, 24; Guests, 6; Guests of the Club, Dr. and Mrs. Charles Vaurie; Mr. & Mrs. D. Vesey-FitzGerald; Total 34.

Mr. Desmond Vesey-FitzGerald read an interesting paper, illustrated by slides, on the breeding of the White Pelican, *Pelicanus onocrotalus*, in the Rukwa Valley, Tanganyika, a full account of which will appear in a subsequent Bulletin.

Further Notes on Aquatic Predators of Birds

by CAPTAIN CHARLES R. S. PITMAN

Received 19th February, 1957

PART I

These notes are divided into marine and freshwater predators. Unless otherwise stated the records quoted have been received in the course of correspondence.

MARINE

Marine predators of birds can be divided into (i) mammals, (ii) sharks, (iii) other fish, (iv) crustaceans and (v) molluscs.

(i) MAMMALS

Mr. G. T. Lockley (Fisheries Officer, Tanganyika Territory) writes: "When I was in the Antarctic, it was common for Gentoo Penguins to fall victims to the Leopard Seal. I think this is well known, but possibly not so well known is that these carnivorous seals will also take the Giant Petrel ("Nelly" or "Stinker"). These disgusting birds, when fully gorged on carrion, are quite incapable of taking off from the water and frequently have to vomit before becoming airborne. It was in these circumstances that I saw one taken by a Leopard Seal." Also, in another communication: "Amongst aquatic predators should be listed the Killer Whale or Grampus, *Orcinus orca*. Scattered throughout the Antarctic literature are references to it taking penguins but I have not myself seen it do this."

Dr. V. E. Fuchs (Leader of the British Trans-Antarctic Expedition in the Geophysical Year) writes: "I saw a Leopard Seal take a Penguin from a small piece of ice—submerge for a few moments, then surface and flick the skin away. This incident is recorded in a 16 mm. film shot taken by Dr. W. L. Sladen."

This habit of the Leopard Seal skinning a Penguin before eating it has been frequently observed.

Mr. Bernard Stonehouse writes that the Leopard Seal is undoubtedly the major predator of birds in Antarctic waters and that it takes Adelie and Emperor Penguins in the pack "and also associates itself with King, Gentoo and Macaroni Penguin colonies on the Antarctic islands—every colony on South Georgia, for instance, has its resident Leopard Seal. They do not appear to take other birds, at least in inshore waters." Also, according to Stonehouse, "there are very few records, none particularly reliable, of Killers taking birds. However, it would be surprising if they did not take, for instance, Emperor Penguins, if opportunities permitted."

Mr. F. C. Fraser (British Museum (Natural History)) has sent me these additional records of birds taken from the stomachs of seals:

(1) Leopard Seal, *Hydrurga leptonyx*: King Shag, *Phalacrocorax atriceps*; Petrel, *Haloboena caerulea*; Petrel, *Pachyptila* sp.; Mutton Bird, *Puffinus* sp.

(2) Australian Sea Lion, *Neophoca cinerea*: Penguins.

(3) Hooker's Sea Lion, *Phocarctos hookeri*: Gentoo Penguin, *Pygoscelis papua*.

(4) Northern Fur Seal, *Callorhinus ursinus*: Single animal had ball of unidentifiable feathers in stomach.

In Fraser's *Giant Fishes, Whales and Dolphins* (p. 262), he mentions that Killers eat penguins.

Olsen (*P.Z.S.*, 1915) has a record of a Bryde's Whale, *Balaenoptera brydei*, in the stomach of which 15 large penguins (*Spheniscus demursus*) and malagas (*Sula capensis*) were found. But Fraser considers "this is an accidental swallowing of the birds by the whale when eating the food common to both."

(ii) Sharks

Mr. Frank Talbot (Scientific Officer, East African Marine Fisheries Research Organization, Zanzibar) writes: "We have a record of feathers being found in the stomach of a Tiger Shark *Galeocerdo cuvier* Lesueur and a whole bird (unidentified) in a White Shark *Carcharhinus* sp."

Mr. N. B. Marshall (Fish Section, British Museum (Natural History)) provides the following: "G. P. Whitley in his *Fishes of Australia*, Part 1, Sharks, etc. (published by the Royal Zoo. Soc. of New South Wales), 1940, mentions that Tiger Sharks, *Galeocerdo arcticus* frequently swallow Mutton Birds. In his *Oceanic Birds of South America*, R. C. Murphy says that sharks are one of the enemies of pelicans. Whitley also quotes a record of a Tiger Shark containing two large crayfish, one Blue Penguin, *Eudyptula minor*, and a large coarse-haired dog. Remains of a Gannet and other birds were also found in other Tiger Sharks. A Great White Shark, *Carcharodon carcharias* has also been found with the remains of a Gannet in its stomach."

Mrs. Ada Cherry Kearton, in *On Safari* (p. 145), referring to Dassan Island off the south-west coast of South Africa, mentions sharks and octopus (without offering any evidence) as being the enemies of the Jackass Penguins, *Spheniscus demursus*.

(iii) Other Fish

I have been unable to obtain definite evidence of species of marine fishes, other than sharks, or those which have been previously recorded,

preying on birds, but according to Mr. P. A. Clancey (Director, Durban Museum): "We occasionally get in seabirds badly injured, presumably by voracious fishes. Penguins seem to suffer greatly and it is not unusual to get one with a flipper bitten off or the feet badly lacerated."

I am informed by the West African Fisheries Research Institute, which is based on Freetown, Sierra Leone, in West Africa, that in the course of regular stomach examinations of fishes, including a very small percentage of Barracuda, Blue Shark (*Scoliodon*) and Sawfish (*Pristis* sp.), since April, 1952, no bird remains have been found.

ANGLER FISH, *Lophius*

NORTH AMERICA. Dr. J. P. Chaplin *in litt.* "A fish that is famous for eating birds is *Lophius americanus* (=*piscatorius*), the "goosefish." One of them is reported to have had seven ducks in its stomach (another to have eaten 75 herring)."

(iv) CRUSTACEANS

In East Africa, on several occasions, I was told that the fiddler crabs of the sea-shore will prey on small birds. This was evidently a case of mistaken identity for Mr. I. Gordon of the Crustacean Section of the British Museum (Natural History) informs me that they are quite incapable of preying on small birds. However, he mentions two other kinds of crab which have been seen to attack young birds and pick the skeletons clean, namely racing crabs or sand crabs, two species of which, *Ocypoda cordimana* and *O.ceratopthalmus*, are common on East African shores, and also land hermit crabs, the East African representatives being *Coenobita rugosa* and *C.cavipes*.

Gordon has drawn my attention to *The Life of Crustacea* by Calman (1911), p. 195, in which Dr. Alcock who visited Pitti Bank in the Laccadive Archipelago, the breeding ground of two species of terns, and found the ground everywhere strewn with dead bodies and clean-picked skeletons of young birds, is quoted: "We soon discovered that one great cause of the wholesale destruction of young birds was the voracity of swarms of large Hermit Crabs (*Coenobita*), for again and again we found recently killed birds, in all the beauty of their first speckled plumage, being torn to pieces by a writhing pack of these ghastly Crustaceans. There were plenty of large Ocypode Crabs, too (*O.ceratophthalmus*), aiding in the carnage."

(v) MOLLUSCS

During several visits to the East African (Kenya) coast in the period July to October, when the palearctic waders are on southern passage in abundance, I was astonished at the relative frequency with which I saw one-legged birds. In most cases the injuries were of recent origin and in one the stump was still bleeding. I presumed that these injuries were due to the birds inadvertently stepping on to or running over open clams when the outlying reefs, where the waders congregate to feed, are uncovered at low tide. These clams, which are normally 4 to 6 inches in length and which sometimes measure as much as 8 inches, are small enough to provide the birds with not readily noticeable hazards. The majority of victims I saw in the vicinity of Malindi, 80 miles north of Mombasa, were the Great Sand Plover, *Charadrius leschenaultii* Lesson. In a sheltered bay one evening, I saw one of these birds swimming towards the shore with the incoming tide and as it landed it collapsed. One leg had been snapped off

below the tibio-tarsal joint and in its struggles to make the shore the wings had become waterlogged. I rendered first aid to the best of my ability and I am glad to record that the cripple was seen again during the next few days.

At Diani, some 20 miles south of Mombasa, in a flock of 70–80 Grey Plover, *Charadrius squatarola* (Linn.), I counted five one-legged birds. Mr. Hugh Copley (Fish Warden, Kenya Colony) writes: "I have seen a number of seabirds with one leg, Sanderling, *Crocethia alba* (Pallas) principally, and have flushed such birds to confirm that they did have only one leg. I have put the loss down to horsehair noose in Egypt, Scandinavia and the islands of the Mediterranean during migration. I have also (in addition to snares) thought of oysters and mussels having closed on a leg, but this is only thinking; I have no proof. Have you noticed that the parting is always at the knee of the leg, and not the bone snapped off?" (*vide Bull.B.O.C.*, Vol. 76, pp. 51–52, "Clams as Predators of Birds," by Sir Philip Manson-Bahr).

I prefer to suspect that it is the Clam which is responsible for the numerous crippled waders which are to be seen along the East African shore line. With the one exception I have already mentioned the amputation has been at the tibio-tarsal joint.

FRESHWATER

Freshwater predators can be divided into (i) mammals, (ii) fish, (iii) crocodiles, (iv) monitor lizards (*Varanus*), (v) chelonians and (vi) amphibians. With a few exceptions, the records quoted are from Africa.

(i) Mammals

The African river and lake otters, *Lutra maculicollis*, and the swamp or clawless otters (*Aonyx*) are alleged to eat birds, but I have no evidence of this. In the stomachs of some three dozen *Lutra maculicollis* and a few *Aonyx* which I personally examined there were no bird remains.

(ii) Fish

Fish predators can be subdivided into: (A) indigenous species and (B) introduced or exotic species.

For clarity I have grouped the information I have collected according to the relevant genus.

(A) indigenous

First (*a*) Large SILURIDS, generally known as catfish or mud fish; and in South Africa popularly, but erroneously, as "barbel."

(*i*) *Clarias*

SUDAN. No records.

WEST AFRICA. Mr. C. S. Webb (formerly a member of the staff of the Zoological Society of London) writes: "The West African rivers abound with catfish which are carnivorous. I have never opened any of them but once when I was in a canoe on a Gold Coast river I liberated a lot of unwanted weaver birds caught in a net overhanging the water and one, in its hurry to escape, hit the water and started flapping violently on the surface. In a few seconds there was a splash and the bird had disappeared, caught by a fish. I imagine any young weaver birds fluttering from nests and hitting the water would meet the same fate." This predator was not identified, but it was suspected that it was a *Clarias*.

UGANDA. Mr. J. B. Heppes (Game Ranger) "did once see what looked very much like a mud fish—one of those flat-headed whiskered creatures—repeatedly snap at some bee-eaters that were swooping over and touching water in a pool on the Nyawa river. Each time a bird swooped, something appeared and snapped at it. The birds seemed to treat it as a game and repeatedly dived for the same spot." I agree with the Senior Fisheries Officer that the fish was probably a *Clarias*.

Mr. T. C. Van Ingen (Fisheries Officer) told me that he had several times found the remains of young birds in the stomachs of *Clarias* which had been caught in the vicinity of nesting colonies of cormorants, darters, egrets and weaver birds.

I never came across any bird remains in the many hundreds of *Clarias* stomachs I examined in Uganda, but the African fishermen of Lake Victoria often told me that big *Clarias* frequented the vicinity of diving birds' and weaver birds' nesting colonies in order to feed on young birds which fell from the nests. These fishermen would when they had the opportunity bait their long lines with nestling birds when fishing for *Clarias*.

The Director of the East African Fisheries Research Laboratory at Jinja, where the Nile emerges from Lake Victoria, writes: "We have found that *Clarias mossambicus* does occasionally take fledgling cormorants. One was seen to be taken at the surface but we did not catch the fish. Very occasionally bird remains have been found in their (*Clarias*) stomachs. African fishermen frequently use fledgling birds as bait for *Clarias*."

LAKE VICTORIA. A Fisheries Officer of the Lake Victoria Fisheries Service believes that young cormorants are taken by fish, if they fall or are pushed from the nest before being fully fledged. He has seen this happen at Godziba Island, where *Clarias* are very numerous close inshore among the rocks, especially near the cormorant nesting colonies.

BELGIAN CONGO. Dr. J. P. Chapin writes: "Twice, in the Uelle, I had fish nibble at birds that fell in the water after they were shot, but I got the birds. Then at Boma (Lower Congo) I shot a weaver bird in a papyrus swamp that fell in a pool of water not 2 feet deep and was immediately gobbled up by a fish, possibly some large catfish."

KENYA. Mr. A. M. T. Henley (Game Ranger) in the Mara river caught a large catfish of some 30 lb. which contained several young birds. He is of the opinion that *Clarias* will take young birds which fall from weaver nests overhanging water.

TANGANYIKA. Mr. G. J. Lockley (Fisheries Officer) writes: "When fishing a small lake in the Kasulu District, Western Province, a Little Grebe which had been meshed in a gill-net and drowned was found to have had one leg wrenched off which might have been the work of *Clarias mossambicus*, the only fish present other than small *Barbus* and *Tilapia*."

NYASALAND. No information available.

NORTHERN RHODESIA. Mr. J. B. Shenton (Game Ranger) caught a 29 lb. *Clarias* which had a fresh Lily Trotter, *Actophilornis africanus* in its stomach.

Mr. M. A. E. Mortimer (Fish Culturist) records: "A *Clarias* sp. taken in a gill-net in a dam in the Eastern Province was found to contain a small

bird, probably Grebe or Dabchick''; and ''A *Clarias gariepinus*, length 15 inches, weight 13 ozs., caught in Chilanga main dam, was found to contain a fledgling bird, species unknown.''

Major G. E. Taylor (Game Ranger) reports that duck which he had shot and which had fallen into the water have been taken by ''barbel,'' presumably *Clarias* or perhaps *Heterobranchus*.

Major W. E. Poles (Senior Ranger) once threw a Hammerkop, *Scopus umbretta* into a river and next day recovered what was possibly the same bird from the stomach of a 12 lb. silurid, species unknown (probably *Clarias*).

Southern Rhodesia. No information available.

South Africa. Mr. T. Parnell (Director of Game and Tsetse Control, Northern Rhodesia) writes: ''In my own experience, small birds, particularly fledglings, which are so readily available from nests in weaver bird colonies at the waterside, are a very popular and frequently successful bait used by Transvaal and Orange Free State river and dam fishermen out after 'barbel' (*Clarias*). That the omnivorous silurids take this bait is of course no indication that this is part of their normal diet, but on the other hand it is I think pretty clear that a fledgling falling from a nest into the water would be quickly snapped up.''

Mr. B. V. Neuby-Varty writes that near Maritzburg hundreds of *Bubulcus ibis* nest in dead wattle trees in enormous clay pits full of water; many nestlings fall into the water and are immediately taken by large *Clarias*. Also, near Durban, he saw a young Wagtail leave its nest and try and fly across a river, but it only got halfway and had to come down on the water. It had nearly drifted to land when a *Clarias* took it.

Mr. H. G. Symons, on a pan in N. Zululand, saw a Black-shouldered Kite, *Elanus caeruleus*, which had fallen into the water after being shot, disappear within half a minute. It was taken by a fish, not by a crocodile, probably a good size catfish or perhaps a tiger fish.

Dr. V. FitzSimons (Director, Transvaal Museum) writes: ''Many freshwater fish have been reported to prey on birds, but the only species I can say I have actually seen doing so is the 'barbel,' *Clarias gariepinus*, which preys on various water birds such as *Anas undulata*, *Paecilonetta* (*Anas*) *erythrorhyncha*, etc. Furthermore, I have seen these fish actually jump out of the water at low-hanging weavers' nests, and knock the eggs and young out into the water and then devour same.''

The Fisheries Officer, Transvaal Nature Conservation Department, has observed ''barbels'' (*Clarias* sp.) taking chicks of the African Coot, *Fulica cristata* on the dams at the Lydenburg Fish Hatchery Station.

Mr. W. Saltmarsh (a leading Transvaal angler) writes: ''It is common knowledge among anglers that certain freshwater fish prey on birds. A small bird (illegal in terms of Transvaal Fisheries regulations) is an extremely excellent bait, particularly during the bird breeding season, for various kind of local indigenous game fishes, including 'barbel' or catfish, *Clarias gariepinus*.''

He also records that a Wild Duck, *Anas undulata*, which had been shot fell into a large dam at Harrismith, and before it could be recovered a huge ''barbel'' (*Clarias*) seized it in its cavernous mouth and disappeared with it.

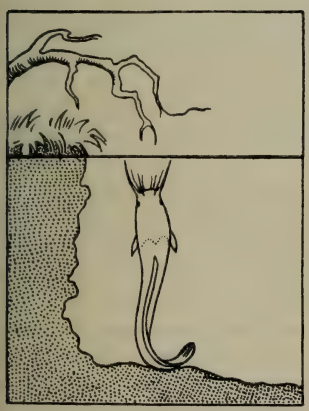
Saltmarsh describes as good places to fish for *Clarias*: "In water below bridges during the summer when large numbers of swallows have built their nests under the bridges overhanging the water. Young swallows, dead or alive, which fall from nests are readily taken by the fish. It has been reported that fish have endeavoured to catch the parent swallows when they skim the water to drink."

"In water with overhanging trees or reeds upon which birds, mostly finks (weavers), have built their nests. Eggs, young birds and the droppings of parent birds all have a food value for the fish below."

He also writes: "Farmers have reported young ducklings being taken by fish in large rivers and farm dams." Some of these fish predators would have certainly been *Clarias*. Anglers reported that a hawk attacked a 'Kiwiki' bird, *Stephanibyx coronatus* which fell into the water above the barrage on the Vaal river. It was immediately taken by an outsize 'barbel' (*Clarias*).

Mr. Hugh Roberts, who keeps about 100 large-mouth yellow-fish, *Barbus pienaarii*, and a dozen or so *Clarias* in a pond 10 yards in circumference and 5 feet deep, tells me that the "barbel" from 1½ lb. upwards, will take a small bird like a Sparrow (*Passer*), Coly (*Colius*) or Masked Weaver (*Ploceus*) with one snap. The moment the fish sees the bird it quickly "creeps" upon it and sucks it under. A 6 lb. "barbel" can swallow a Laughing Dove (*Stigmatopelia*) or a Starling (*Amydrus*) with comparative ease, or 3 sparrows. The method is always the same whether the bird is dead or alive. It is sucked down by the vacuum caused by the sharply opened fish mouth just around and below it, after the fish has quietly come up below its prey, and is at once taken down to the bottom. It is difficult to see what goes on down below, but no feathers other than those initially disturbed ever come up. Should the "barbel" be overfed it may reject the bird when the whole carcase will come to the surface.

Although Roberts has never actually seen a duckling taken he is quite certain that *Clarias* is responsible for the disappearance of little ducklings.



Muddy or murky water does not appear to handicap the "barbel." Roberts (see sketch) remarks on the skill with which a "barbel" can stand on its tail and remove a caterpillar off a stick dipping down above the water. This probably explains how FitzSimons' "barbels" were able to jump at weavers' nests. A big "barbel" taking anything off a twig or perch not actually in the water is not usually very quick about it, letting its "whiskers" come up first, and sometimes rising two or three times before plucking up enough courage to grab at its quarry. It is, however, doubtful whether it is quick enough to catch birds in this fashion.

Mr. A. Cecil Harrison (Provincial Inland Fisheries Officer, Cape Province, and Hon. Sec. The Cape Piscatorial Society) considers the question of birds being taken by fish as "largely a matter of opportunity and not a specialized

habit . . . but it seems to be well known that the large 'barbel' or catfish (*Clarias*) take nestlings which fall on the water, and that young birds are often used for bait. . . . All young waterfowl are of course in jeopardy where there are large predatory fish in the water.''

(*ii*) *Heterobranchus*

The only records given me are from Tanganyika and Northern Rhodesia.

TANGANYIKA. From Lockley: ''In the stomach of a large (30–50 lb.) *Heterobranchus longifilis* caught in the Luiche river, near Kigoma (Lake Tanganyika), I found some unidentifiable passerine bones which might have been one of the weaver birds. These fish have scavenging habits and the bird may well have been dead when taken.''

NORTHERN RHODESIA. Taylor's reference to *Heterobranchus* will be found under *Clarias*.

(*iii*) *Bagrus*

I have one record only.

LAKE VICTORIA. The Fisheries Officer of the Tanganyika region of the Lake Victoria Fisheries Service reports: ''I have seen a big *Bagrus docmac* take an adult White-faced Tree Duck, *Dendrocygna viduata* from the surface. I believe that young cormorants are taken by fish, particularly *Bagrus* and *Protopterus*, if they fall from the nest before being fully fledged.''

(*b*) LUNGFISH (*Protopterus*)

Protopterus aethiopicus is a carnivorous, and at times cannibal, species. It certainly preys on birds as the opportunity offers, though records of its so doing are meagre (also see under *Bagrus*).

SUDAN. Professor H. Sandon (University College of Khartoum) writes: ''I have no records at all of birds being eaten by fish. The only fish that I imagine might be likely to do so would be the larger lungfish and *Hydrocyon*. But no one as far as I know has recorded the capture of birds by either of these, so presumably, if they ever do so it must be so rare as not really to count.''

UGANDA. Mr. C. W. Chorley (Sleeping Sickness Inspector for the Uganda shores of Lake Victoria) saw some Africans pull ashore near Entebbe a huge lungfish, *P.aethiopicus*, which they had speared in the shallows where it had been struggling noisily. The fish was 5 feet 5 inches long and sticking out of its mouth was the neck and head of an Egyptian goose, *Alopochen aegyptiacus*, which it was endeavouring to swallow, but which was choking it.

The Senior Fisheries Officer, Uganda, who has ''never come across the remains of birds in any fish'' that he has cut open, sees ''no reason why large lungfish should not occasionally take water birds.'' He also reported that the Game Ranger of Acholi when fishing for Nile Perch (*Lates*) in the Aswa river had baited his hook with half a freshly shot duck and immediately lost it to a large fish which he believed to have been a lungfish. I have occasionally come across bird remains in *Protopterus* caught in the vicinity of waterfowl and weaver colonies, and I have noticed that at evening time and by night large specimens of both *Protopterus* and *Clarias* are particularly active in the shallows beneath such colonies; this behaviour being well known to the African fishermen who take advantage of it and try to spear the fish.

LAKE VICTORIA. The Fisheries Officer for the Tanganyika Section of the Lake Victoria Fisheries Service has recorded: "I have seen a Lung Fish, *Protopterus aethiopicus*, take a Lesser Moorhen, *Gallinula angulata*. The bird was sitting on the surface of the water. There was a quick swirl, the top of the fish's head broke the surface, and the bird was gone."

(*c*) TRUE BARBELS (*Barbus*)

SOUTH AFRICA. In connection with *Barbus* the only information I have been able to obtain is indefinite and derived from South Africa. Saltmarsh's previous remarks in regard to bait for *Clarias* and good places to fish are equally applicable to the Yellow-fish (large-mouth), *Barbus pienaarii* and the Yellow-fish (small-mouth), various spp. of *Barbus*.

Harrison has written that although largely a matter of hearsay "it seems to be well known that large yellow-fish, *Barbus holubi*, take nestlings which fall on the water, and that young birds are often used for bait."

Also see Skead's remarks under "(*f*) EELS."

(*To be continued*)

The Temperature of some common British Birds

by MR. H. A. BILBY

Received 17th March, 1957

Introduction

It is slowly becoming fashionable for bird banders to weigh and measure the birds they trap, as well as banding them with numbered and/or coloured bands. This is a most useful, interesting and satisfying aspect of modern bird study, and enables one to come into close contact with the living bird.

There are, however, a few other items of interest that can be recorded at the same time, with very little extra cost in time or money, two of the most important of which are the collection of ecto-parasites and the recording of the birds' temperature. Of these the former is a regular feature at some of the modern bird observatories but as far as I know the latter is only rarely recorded. I therefore offer the following details of a few of the more common British birds handled in trapping operations in south-west Middlesex recently.

I do not hesitate to say at once that this is only a preliminary study and although the details are true of the birds handled in this area, there is every possibility that under different circumstances different results may be achieved. For instance, I feel that the temperature of a bird will vary considerably according to whether the air temperature surrounding the bird is high or low (summer or winter).

I would also like to take this opportunity to ask that any interested bird banders contact me to take this study further.

Methods used

In preliminary studies undertaken on nestling Swallows (*Hirundo r.rustica*) it was found that the temperature could fluctuate wildly, as much as 17.1 deg. F. in ten minutes; with a range of 24.5 deg. F. (89.5—114 deg. F.). All these temperature recordings were made with a standard clinical thermometer, but due to this it was decided to use two thermometers, a clinical and an 8in. mercury reading 0—120 deg. F. When a bird is trapped

it is taken to the records building where the temperature is taken, it is then weighed, measured and banded; it is then temperature recorded again and released, the whole operation taking only ten minutes.

There are three places that a bird's temperature can be recorded, the rectum, under the wing root and in the proventriculus. A series of experiments with ten nestling Swallows, taking ten readings of each from all three places as quickly as possible, to try to obviate fluctuations, did not show any significant differences in body temperature, so according to circumstances one or other of these three places can be used. Most readings were taken in the proventriculus but it is sometimes rather difficult to open a small bird's beak with safety; in a case like this the wing root method is to be recommended.

Where a standard thermometer is used a rapid series of readings can be taken but this has only been achieved so far with the Swallow (Table 1). It is most interesting to see the mercury rhythmically moving as the bird's heart beats.

Results. Systematic list. (*Readings in degrees F.*)

As a matter of interest I have included the temperatures of nestling Swallows, but I have no data on adults. All other records are of adults which have been trapped.

274/. Swallow. *Hirundo r.rustica* (Linn).
2,296 readings. Max. 114.0. Min. 89.5. Aver. 102.4.
288/. Tit, Great. *Parus major newtoni* (Prazak).
6 readings. Max. 99.0. Min. 76.0. Aver. 88.7.
289/. Tit, Blue. *Parus caeruleus obscurus* (Prazak).
10 readings. Max. 99.0. Min. 86.0. Aver. 92.6.
303/. Thrush, Song. *Turdus e.ericetorum* (Turton).
16 readings. Max. 106.0. Min. 91.0. Aver. 98.7.
308/. Blackbird. *Turdus m.morula* (Linn).
6 readings. Max. 105.2. Min. 103.2. Aver. 104.2.
325/. Robin. *Erithacus rubecula melophilus* (Hart).
6 readings. Max. 95.2. Min. 91.0. Aver. 92.7.
371/. Dunnock. *Prunella modularis occidentalis* (Hart).
6 readings. Max. 95.0. Min. 85.0. Aver. 90.0.
389/. Starling. *Sturnus v.vulgaris* (Linn).
6 readings. Max. 102.0. Min. 100.0. Aver. 101.7.
392/. Greenfinch. *Chloris c.chloris* (Linn).
22 readings. Max. 99.0. Min. 88.0. Aver. 93.6.
407/. Chaffinch. *Fringilla coelebs gengleri* (Klein).
8 readings. Max. 105.0. Min. 100.0. Aver. 102.5.
424/. Sparrow, House. *Passer d.domesticus* (Linn).
6 readings. Max. 103.0. Min. 101.0. Aver. 102.0.

Summary

The methods used in recording birds' temperatures are described and a list of maximum, minimum and averages are given for the temperatures of the adults of ten common species, trapped recently in south-west Middlesex.

Details are also given of preliminary work carried out on nestling Swallows. In this study a total of 2,296 temperature readings were collected, giving a maximum of 114.0 deg. F., minimum 89.5 deg. F. and an average of 102.4 deg. F.

Much more information is required on even the most common birds and it is suggested that bird banders contact the writer to extend this study further.

TABLE I — Temperature series at 30 seconds Interval

Birds	*Readings*										
A	91.6	91.9	92.7	93.9	95.2	96.3	96.2	96.1	96.7	97.9	98.6
B	99.2	99.9	101.6	102.7	104.1	106.7	108.1	109.9	111.0	112.5	112.7
C	101.9	101.9	102.1	102.6	102.8	103.1	103.6	104.0	105.1	106.2	108.2
D	100.0	101.1	102.6	104.1	105.2	106.3	106.9	107.3	107.9	108.8	109.6

(*continued*)

Birds	*Readings*									*Range*
A	100.1	102.0	102.4	104.1	106.1	108.7	106.4	106.1	102.7	17.1
B	109.8	108.6	106.4	107.2	106.1	104.2	102.6	100.1	102.2	13.5
C	110.1	109.1	106.7	106.0	105.2	103.9	102.6	101.9	102.2	8.2
D	111.1	112.7	113.5	114.1	112.0	111.6	111.2	110.3	109.8	14.7

Geographical Variation in the South African Populations of *Malaconotus blanchoti* Stephens with the Description of a New Race

by Mr. P. A. Clancey

Received 29th January, 1957.

About seven geographical races of the large and massive-billed Grey-headed Bush-shrike *Malaconotus blanchoti* Stephens are currently recognized. These are based mainly on the amount of russet colouration on the breast, which is absent or vestigial in some races, notably in *M.b.monteiri* (Sharpe) of Angola and *M.b.catharoxanthus* Neumann described from the Bahr-el-Ghazal in the southern Sudan, and extremely prominent in others, such as *M.b.schoanus* Neumann of southern Abyssinia and *M.b.approximans* (Cabanis) of coastal East Africa. Some workers have laboured to discredit these races, but Chapin, in his great work, *The Birds of the Belgian Congo*, part iv, 1954, p. 41, correctly points out that "despite any opinion to the contrary, the variation in brownish colour on the chest is geographic." The most austral in distribution of the named races is *M.b. hypopyrrhus* Hartlaub, 1844: Africa—restricted type-locality Durban, Natal, which supposedly ranges from the eastern Cape Province, Natal, Zululand, etc., northwards to parts of the extreme eastern Belgian Congo, western and southern districts of Tanganyika Territory and the Nairobi district of Kenya Colony. In their recent *Birds of Eastern and North-Eastern Africa*, vol. ii, 1955, p. 636, Mackworth-Praed and Grant sink *M.b.hypopyrrhus* into the synonymy of *M.b.blanchoti* Stephens, 1826: West Africa, which they now aver actually came from South Africa. Stephens' *Malaconotus blanchoti* is based on La Piegrieche Blanchot of Levaillant, *Histoire naturelle des Oiseaux d'Afrique*, vol. vi, 1808, p. 122, pl. 285, which unquestionably come from Senegal and not southern Africa. According to Levaillant, the bird was obtained by M. Blanchot, a one-time governor of Senegal, who deposited the specimen in the rich collection of a M. Raye de Breukelerwaert of Amsterdam. On the basis

of the Levaillant figure, it could conceivably be postulated that the species depicted is not the Grey-headed Bush-shrike at all, because of the diminutive nature of the bill and the curiously marmorated ventral surfaces. In many respects the figure could apply just as easily to the Orange-breasted Bush-shrike *Chlorophoneus sulfureopectus* (Lesson), 1831: Senegal. The fact that Levaillant's artist depicted a bird with a bill far too small for any of the heavy-billed gladiator-shrikes seems almost to negative the claims of those protagonists who would have us use the name *M.blanchoti* for the species under discussion (see Grote, *Anz.Ornith.Gesellsch.Bayern*, vol. ii, 1936, pp. 373–374). Furthermore, at the time Levaillant's work appeared little of this species' South African range was accessible, and that only the bay of Port Natal, where ships occasionally called to take on supplies of fresh water and to barter with the natives for ivory and slaves. It is almost certain that very few birds were collected in Natal until shortly after the Napoleonic Wars, when a small but vigorous European settlement was established, and with the gradual opening up of the country, Port Natal (i.e. Durban) became an important centre for collectors of natural history specimens. I cannot concede that there are really valid reasons for believing that the original specimen of Levaillant's La Piegrieche Blanchot came from South and not West Africa, and for the purpose of this short paper on the geographical variation in the southern Africa populations I consider that *M.b.blanchoti* is the correct name for the West African race.

A recent study of material of this species preserved in the collections of the East London, Durban, Natal and Transvaal Museums shows that the South African populations are divisible into two races on the colouration of the head-top, nape and mantle. A series of eight specimens from the eastern Cape Province (Committees Drift, on the Great Fish River; East London; Kei Bridge on the Great Kei River) and Pondoland (Embotyi; Mntafufu River) is separable from a long series from Natal, the Transvaal and southern Portuguese East Africa in having the grey of the head-top and nape slightly but distinctly darker, and the yellowish olive (about the *Serpentine Green* of Ridgway, "Color Standard and Color Nomenclature," 1912, pl. vxi) of the mantle and rump darker and more greenish. The pale yellow apices to the tail-feathers are also smaller. The distinctions shown by the eastern Cape Province and Pondoland populations warrant their nomenclatural segregation from those of Natal northwards, and it would seem more in accord with the fact now available to recognize two races of *M.blanchoti* from the South African subcontinent instead of the present one. *Malaconotus hypopyrrhus* Hartlaub, 1844: Africa, has had its type-locality restricted to Durban, Natal, by Sclater, *Systema Avium AEthiopicarum*, part ii, 1930, p. 636, and this name is applicable to the populations of Natal, Zululand, the Transvaal, Swaziland, Portuguese East Africa, Southern Rhodesia, etc., northwards. For the populations of the eastern Cape Province no name appears to be available, and to fill this void I propose *M.b.extremus* mihi below.

The discovery of this new race of *M.blanchoti* is interesting because until the publication of Hewitt's *A Guide to the Fauna of the Albany District*, part i, Vertebrates, 1918, p. 41, this species was apparently not known to occur south of the Pondoland forests, and judging by recent

communications appearing in the *Ostrich* (*vide* Fulque Agnew, *tom.cit.*, vol. xxiv, 3, 1953, p. 184; Taylor, *idem*, vol. xxvi, 3, 1955, p. 158), it is still little-known in the eastern Cape. None of the early travellers apparently recorded its presence in that territory (see Stark and Sclater, *Birds of South Africa*, vol. ii, 1901, p. 41, who record it as ranging from Natal "a short distance into Eastern Cape Colony," i.e. to Pondoland). Roberts, *Birds of South Africa*, 1940, p. 307, also states that its southern limit of range is Pondoland, as does Vincent, *Check List of the Birds of South Africa*, 1952, p. 94, from which region it was made known by the collecting activities of Shortridge, Swinny and others. Recent field-work by the staffs of the Durban and East London Museums in the eastern Cape shows that the species occurs locally and not uncommonly certainly as far south as the country lying between the Sundays and Great Fish Rivers.

The populations of the Grey-headed Bush-shrike occurring in the South African sub-continent can be arranged in two races, the nomenclature, characters and ranges of which are as follows:—

1. *Malaconotus blanchoti hypopyrrhus* Hartlaub

Malaconotus hypopyrrhus Hartlaub, *Systematisches Verseichniss der naturhistorischen Sammlung der Gesellschaft Museum, Bremen*, abth. 1, Vögel, 1844, p. 61: Africa—restricted type-locality, Durban, Natal, *apud* Sclater, *Systema Avium AEthiopicarum*, part ii, 1930, p. 636.

Top of head and nape grey—close to the *Dark Gull Grey* of Ridgway, *loc. cit.*, pl. liii—about UUV-7–1° (Villalobos *Colour Atlas*, Buenos Aires, 1947); mantle and rump near *Serpentine Green* (about YYL-7–8°). Underside clear, bright yellow, the breast, and to a lesser degree the sides of the body, moderately washed with russet.

Wings 112.5–117 (115.1), culmens from base 31.5–35.5 (34.1), tails 103.5–113 (107.6) mm. Ten measured.

Material: 35.

Range: From Natal (coastal and midland districts), Zululand, Swaziland and the eastern and northern Transvaal to Southern Rhodesia and southern Portuguese East Africa. Extralimitally to Northern Rhodesia, Nyasaland, northern Portuguese East Africa, southern and western districts of Tanganyika Territory, extreme eastern Belgian Congo in Ruanda-Urundi, north to the Nairobi district of Kenya Colony. Intergrading to the north and north-east of its range with *M.b.schoanus* and *M.b.approximans*, and in the north-west with *M.b.interpositus* Hartert.

2. *Malaconotus blanchoti extremus*, subsp.nov.

Similar to *M.b.hypopyrrhus* as above defined but grey of head-top and nape darker, near to the *Slate Grey* of Ridgway, *loc. cit.*, pl. liii (about UUV-5–1°); mantle and rump darker and greener, less yellowish (about YYL-7–6°). Wings and tail rather darker and greener, and ventrally averaging rather duller, the breast slightly darker russet. Pale yellowish apices to tail-feathers smaller in series.

Wings 111–120.5 (115.5), culmens from base 32.5–35 (33.6), tails 105–113.5 (108.8) mm. Eight measured.

Material: 8.

Type: ♂ adult. Committees Drift, on the Great Fish River, Albany district, eastern Cape Province. 2nd October, 1956. Collected by P. A. Clancey. In the collection of the Durban Museum.

Measurements of the Type: Wing 120.5, culmen 34+, tail 113.5 mm.

Range: In the eastern Cape Province from about the Albany and King William's Town districts to the east of the Sundays River northeastwards to the forests of East Griqualand and coastal Pondoland.

On a Pattern Translocation in the Scottish Jay

by Mr. Alfred Hazelwood and Mr. Eric Gorton

Received 11th March, 1957

Although the colour and pattern of the crest of the Scottish Jay *Garrulus glandarius caledoniensis* nobis are remarkably consistent for the species, a recent example, an adult ♀ from Perthshire, shows a most unusual divergence.

The feathers of the forecrown are quite normal, being black with white fringes, but the longer feathers of the crest are blue with black transverse markings to a degree which recalls the pattern of the wing coverts, although the blue is of greater intensity. The purplish suffusion of the hind-neck which is so characteristic of this form is somewhat reduced and the amount of barring on the tail is less than usual. With a wing of 201 mm. the bird approaches the maximum (202 mm.) of this long-winged race.

In another specimen the normal pattern of light and dark blue on the primary and secondary coverts is replaced by one in which the dark barring occurs at irregular intervals and in some places is missing altogether, the pigment being fairly evenly distributed over the barbs in a way which suggests that the colour has "run." In addition this bird has an unusual amount of blue barring on the chestnut median coverts.

Since the wing-coverts of the first bird and the crest of the second are normal, it seems apparent that different genes are involved in the deposition of the pigment in these areas and in the structural modifications of the feather which enhance the colour.

A new race of the Long-billed Rock Pipit, *Anthus similis*, from Burma

by Mrs. B. P. Hall

Received 12th February, 1957

The Long-Billed Rock Pipit, *Anthus similis* Jerdon, reaches the eastern limit of its range in the hills of Central Burma where there is an isolated population widely separated from the nearest race, *A.s.jerdoni* (Finsch), of the Punjab, United Provinces and Central India. Up to the present this Burmese population has been associated with *A.s.jerdoni* since it is similar in colour, but comparison of measurements shows the Burmese birds to be conspicuously and consistently smaller.

		Wing	Bill	Tail	Hind Claw	Tarsus
A.s.jerdoni	♂	94–105	19–21	71–80	9–11	26–29
	♀	92–99	18–20	69–77	10–11	26–29
Burmese race	♂	87–92	18–19	67–73	8–10	24–26
	♀	84–89	18	66–67	9–11	24–26

I propose that these birds shall be called

Anthus similis yamethini new race

Description: Similar to *A.s.jerdoni* in colour and pattern but smaller.

Closer to *A.s.similis* in size but paler and less heavily streaked on the breast.

Type: ♂ Aingdo, Yamethin district, Central Burma, 15th November 1938, collected by H. C. Smith, Brit. Mus. Reg. No. 1948.80.2754. Wing 89, bill 19, tail 72, hind claw 10, tarsus 26 mm.

Range: Hills and foothills in the Yamethin, Meiktila, Myingyan, Pakokku and Mandalay districts of Central Burma.

Specimens examined: 8 ♂, 3 ♀ and 7 unsexed adults of which one with a wing of 84 mm. has been presumed a female in compiling the table of measurements: 2 juveniles (August and September): compared with a large series of *A.s.jerdoni*.

A Note on Some Generic Names in the Timaliinae

by Mr. H. G. Deignan

Received 11th March, 1957

Authors who treat as congeneric the 17 to 19 species of Timaliinae formerly distributed under the generic names of *Trichastoma* Blyth, 1842, *Malacocincla* Blyth, 1845, *Illadopsis* Heine, 1860, *Nannothera* Sundevall, 1872, *Erythrocichla* Sharpe, 1883, *Anuropsis* Sharpe, 1883, *Aethostoma* Sharpe, 1902, and *Elocincla* Riley, 1939, should note that the oldest available name is *Trichastoma* Blyth, 1842 (genotype: *Tr. rostratum* Blyth), which, under current interpretations of the International Rules of Zoological Nomenclature, is *not* preoccupied by *Trichostoma* Pictet, 1834, Trichoptera.

Blyth's spelling was emendated by Strickland in 1849 to *Trichostoma*, and in this form the name was generally adopted by subsequent writers, until, in 1902, Sharpe gave the new name *Aethostoma*, on grounds of homonymy. This Sharpean name should, however, be considered a replacement only of Strickland's unwarranted emendation.

I wish also to point out that, when *Turdinus* is combined with *Napothera*, and *Siva* with *Minla*, the latter name in each pair is the correct one to use.

Notes on African Larks—Part IV

by Mr. C. M. N. White

Received 24th December, 1956.

The genus Certhilauda

In the present notes I have taken as the basis for discussion the conception of *Certhilauda* adopted by Mienertzhagen (*P.Z.S.* 1951). This treatment of *Certhilauda* was not very happy, partly because he omitted to study *Mirafra* and partly because he allowed bill form to influence too greatly the criteria for the genus. In fact as I have pointed out elsewhere the distinction between *Certhilauda* and *Mirafra* is an arbitrary one; bill form is an unsafe generic character alone since this is probably the most plastic organ of a bird's structure. I believe that *Certhilauda* as proposed by Meinertzhagen in 1951 is a composite group which needs rearrangement. The species included by him were:

(i) *Chersophilus duponti* (Vieillot). My knowledge of this North African lark is limited to the museum but it does not seem closely allied to *Certhilauda*. Its white outer tail feather and reduced first primary are unlike the true *Certhilauda* species and in general it suggests to me possible origin from Mirafra, such as *M.africana*. It is preferable to keep it as a monotypic genus until more is known of its affinities.

(ii) *Alaemon alaudipes* (Desfontaines). I agree with Vaurie (*Bull.Amer. Mus.N.H.* 97, 1951, p. 438) that this species is not allied to *Certhilauda* and must be kept as a separate genus probably not too far from *Ammomanes*. Meinertzhagen makes *A.alaudipes* and *A.hamertoni* Witherby conspecific; in my view the two are better kept as distinct species in view of the rather sharp break in the characters distinguishing them.

(iii) *Heterocorys chuana* (Smith) and (iv) *Certhilauda somalica* Witherby. I have already shown in early studies in this series that these two species should be placed in *Mirafra*.

(v) *Pseudalaemon fremantlii* (Phillips). I can see no affinities between this species and *Certhilauda*. There is a remarkable parallel in colour and pattern between the three races of *Pseudalaemon* and *Calandrella rufescens somalica*, *megaensis* and *athensis* both on the upper and undersides. Moreover the dark facial pattern of *Pseudalaemon* is remarkably like a rather reduced version of the pattern in *Calandrella* (''Aethocorys'') *personata*. *Pseudalaemon* differs from *Calandrella* in its developed first primary and in its bill, but the latter is much more massive than the bill of *Certhilauda*. I believe *Pseudalaemon* should be maintained as a monotypic genus near to *Calandrella*.

(vi) *Certhilauda albescens* (Lafresnaye) and (vii) *C.curvirostris* (Hermann). These two species show close resemblance in pattern and colour: the former is rather smaller, has darker under wing coverts and a much smaller bill. If bill alone were the criterion *C.albescens* should be transferred to *Mirafra* for there is nothing in its bill to distinguish it from *Mirafra*; the dark tail and lack of a rufous wing pattern also would not exclude it from *Mirafra*. But the long first primary and the remarkable resemblance in colour and pattern suggest that its affinities are with *C.curvirostris*. If this is so we have a typical case of two allied sympatric species differing mainly in size and especially in bill shape. I therefore regard these two species as rightly placed in *Certhilauda*.

(viii) *Certhilauda* (''*Chersomanes*'' *albofasciata* (Lafresnaye). This lark does not appear to be closely allied to the two preceding species apart from its bill which resembles that of *curvirostris*. The tail is proportionately very short with a broad white tip not resembling any other *Mirafra* or *Certhilauda*; the pattern of the upperside in fresh plumage presents a scaly appearance such as some *Mirafra* exhibit and the inner secondaries are patterned like some *Mirafra*. On the other hand the distribution is largely sympatric with the two species of *Certhilauda*. All three may well be derived from *Mirafra* stock; *curvirostris* has moved furthest away from *Mirafra* with its long thin bill, long tail and long first primary; its pattern has also diverged widely from *Mirafra*; *albescens* has retained a *Mirafra*-like bill but otherwise resembles *curvirostris* although its tail is proportionately shorter; *albefasciata* has retained a *Mirafra*-like aspect on the upper surface but acquired a *Certhilauda*-like bill; its tail is abnormal in being short and in pattern. On balance I propose to retain *albofasciata* in *Certhilauda* as a rather aberrant species. On this analysis there are only three species of *Certhilauda*, all confined to south and south-western Africa. All have been recently reviewed by Macdonald at the level of subspecific variation, and I have no amendments to propose at present to his arrangement of their geographical variation.

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DINNERS AND MEETINGS FOR 1957

17th September, 15th October, 19th November, 17th December.

SEPARATES

Contributors who desire free copies of the Bulletin containing their notes should state so on their MS., otherwise these will not be ordered These will be supplied up to a maximum of fifty.

PUBLICATION OF THE "BULLETIN"

Members who make a contribution at a Meeting should hand the MS. to the Editor at that Meeting. As the proofs will be corrected by the Editor, it is essential that the MS. should be correct and either typed or written very clearly with scientific and place names in block letters. The first mention of a scientific name should be spelt out in full, i.e., genus, specific name, racial name (if any), and author. Any further mention of the same name need only have the initial letter of the genus and no further mention of the author.

If no MS. is handed to the Editor at the Meeting, a note will be inserted mentioning the contribution.

BLACK AND WHITE ILLUSTRATIONS

The Committee have decided that in future the Club will pay for a reasonable number of black and white blocks at the discretion of the Editor. If the contributor wishes to have the blocks to keep for his own use afterwards, the Club will not charge for them, as has been done in the past.

Communications are not restricted to members of the British Ornithologists' Club, and contributions up to 1,500 words on taxonomy and related subjects will be considered from all who care to send them to The Editor, Dr. J. G. Harrison, "Merriewood", St. Botolph's Road, Sevenoaks, Kent.

Communications relating to other matters should be addressed to the Hon. Secretary, N. J. P. Wadley, Esq., 14 Elm Place, London, S.W.7.

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- 3 OCT 1957

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BULLETIN
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The five hundred and fifty-eighth meeting of the Club was held at the Rembrandt Hotel, S.W.7, on Tuesday, 17th September, 1957, following a dinner at 6.30 p.m.

Chairman: Mr. C. W. Mackworth-Praed.

Members present, 18; Guests, 2; Total, 20.

The Chairman announced the death of Sir Norman Kinnear and members stood in his memory. Sir Norman was Editor from 1925-30, Vice-Chairman from 1934-35 and Hon. Secretary from 1940-43.

Further Notes on Aquatic Predators of Birds

by Captain Charles R. S. Pitman

Part II.

(*d*) Tiger Fish (*Hydrocyon*)

Sudan. Mr. T. R. H. Owen (Provincial Administration) suggests that *Hydrocyon* is a possible predator of birds; it will take a lure made of feathers. Also, see the remarks by Sandon under *Protopterus*.

West Africa. The Fisheries Department of the Gold Coast suggests "it is certainly likely that *Hydrocyon* and some others would take birds when the chance offered."

Uganda. The Senior Fisheries Officer sees no reason why Tiger Fish should not occasionally take water birds.

South Africa. See previous notes by Symons under *Clarias*. Saltmarsh believes "that Tiger Fish, *Hydrocyon vittatus* also eats birds when the opportunity occurs."

Tanganyika. The Fisheries Officer tells me that Tiger Fish will take feathered jigs.

Although all the information I have obtained in connection with *Hydrocyon* is inconclusive, I have little doubt that given the opportunity the Tiger Fish will prey on birds.

(*e*) Giant Perch or Nile Perch (*Lates*)

Egypt. Colonel R. Meinertzhagen writes: "The only occasion on which I have seen fish taking birds was in the Giza Zoo where an Egyptian Goose was transferring its chicks to a pond from its nest in a tree. Just as fast as the chick was placed on the water, a Nile Perch would snatch it. Nicol, who also witnessed it, said this always happened every year."

Uganda. Fledgling birds are one of the baits used by Nilotic fishermen when fishing for Nile Perch.

The Senior Fisheries Officer sees no reason why Nile Perch should not occasionally take water birds.

TANGANYIKA. The Fisheries Officer writes that certain African tribes "at the south end of Lake Tanganyika have tales of large fish which attack and *inter alia* catch 'ndege' (birds). The only birds that could be caught on the water of Lake Tanganyika would be Cormorants, Darters or the Grey-headed Gull. I don't dismiss these tales as entirely legendary. I believe these fish to be very large *Lates* and I know of a well-authenticated case of a large Tanganyika *Lates* biting at a canoe paddle; they will certainly take feathered jigs."

(*f*) EELS (*Anguilla*)

KENYA. Copley reports one case of a nestling weaver bird being found in the stomach of a 9¼ lb. ♀ eel, *Anguilla nebulosa labiata* which was caught in the Gura river.

SOUTH AFRICA. Harrison's previous remarks about predacious *Clarias* and *Barbus* are equally applicable to large eels, *Anguilla mossambica*, as are Saltmarsh's observations under *Clarias*.,

Mr. C. J. Skead (Director, Kaffrarian Museum, King William's Town) knows: "that birds make first-class bait for eels and for *Barbus* species. Anglers swear by them."

(*g*) UNIDENTIFIED

SUDAN. Mr. C. J. P. Ionides (Senior Game Ranger, Tanganyika) writes: "I've read of a type of waxbill on the Blue Nile being swooped on by hawks, driven on to or very near to the water, and being then taken by a large fish, but I have not seen this." I imagine that the bird referred to is probably a species of *Quelea*, which presumably is also the small bird referred to as "of the Linnet kind" at the bottom of p. 433, *Ibis* 1947.

(B) INTRODUCED

In Africa, Trout, both Brown and Rainbow, and American Black Bass are predators of birds.

(*a*) BROWN TROUT (*Salmo trutta*)

KENYA. The Fish Warden tells me that big Brown Trout, *Salmo trutta*, will cruise up and down under bushes containing weaver birds' nests, and take the nestlings which fall. A 7 lb. cock Brown Trout caught in the Gura river contained a nestling weaver bird.

SOUTH AFRICA. Mr. R. E. Symons (formerly Director of Zululand Game Parks) "once caught a trout in the Bushmans River and found in its stomach a young weaver finch."

Harrison tells me that at the Steenbras Reservoir an angler caught a 3½ lb. brown trout which had a nestling in its stomach.

(*b*) RAINBOW TROUT (*Salmo irideus*)

KENYA. On three separate occasions and in different localities I have observed a large Rainbow Trout rising again and again at Swallows (*Hirundo*) as they dipped and skimmed the water, but never a bird was touched.

(*c*) LARGE-MOUTH BLACK BASS (*Micropterus salmoides*)

SOUTH AFRICA. H. G. Symons writes: "The only time I have actually seen fish go for birds was last year when a 3–4 lb. Black Bass took a young *Anas sparsa* duckling a few days' old on my dam. The ducklings had taken cover in a clump of bulrushes while the mother was trying to attract my attention about 30 yards away. I was looking into the rushes when there was a swirl on the edge of the clump and a duckling which had

just broken surface was pulled under by a large bass. I have known of bass being taken on a line baited with young weavers.''

The Fisheries Officer of the Transvaal Nature Conservation Department has observed Large-mouth Black Bass taking chicks of the African Coot, *Fulica cristata* on the dams at the Lydenburg Fish Hatchery Station.

The Provincial Inland Fisheries Officer of Cape Province *in litt.* ''the Large-mouth Bass is now one of the main predatory fish. I have known young passerine birds to be taken cf. wagtails and weavers, and have found them in bass stomachs. In one farm dam I visit regularly, the coots have difficulty in rearing more than an occasional young bird.''

Neuby-Varty writes that he saw a Large-mouth Black Bass in a Natal dam take a Muscovy duckling, in fact all the ducklings were taken soon after they were hatched. On the same dam he saw a swallow (*Hirundo*), when drinking by dropping to the water, disappear in a swirl as a fish took it.

FitzSimons has seen Black Bass attempt to seize—usually without success—swallows as they swoop down over the water.

In the 10th April, 1957, South African *Farmers' Weekly*, it is recorded that a 4½ lb. Large-mouth Black Bass, caught on Mr. W. O. Meet's farm dam in the Bethlehem District, had a swallow in its stomach.

MISCELLANEOUS

(*a*) Examination of fish stomachs has been regularly carried out by the West African Fisheries Research Institute since April, 1952, and during a period of 4½ years the stomachs of a total of 22,000 euryhaline fishes were examined. They were caught in an area 13 miles upstream from the mouth of the Sierra Leone river. About 25 per cent. of the catch consisted of predacious species inasmuch as they eat fish, swimming crabs, prawns, etc., but no bird remains have been found.

(*b*) The use of gill-nets—which are anchored suspended in the water—into which fish swim and become entangled, can be disastrous to waterfowl in small, shallow lakes. Therefore, it might not be extravagant to suggest that although inanimate these nets do in fact ''prey'' on birds. In Uganda it was quickly discovered that stocking such lakes with species which were fished for with these set-nets usually entailed the elimination of the waterfowl, the principal victims being the Great Crested Grebe, *Podiceps cristatus*; Little Grebe, *Poliocephalus ruficollis*; White-backed Duck, *Thalassornis leuconotus*; Maccoa Duck, *Oxyura maccoa*; and African Pochard, *Aythya erythropthalma*. Less frequently Cormorants, *Phalacrocorax* spp. and Darters, *Anhinga rufa*; Yellow-billed Duck, *Anas undulata*; Hottentot Teal, *Anas punctata*; Red-bill, *Anas erythrorhyncha*; Pigmy Goose, *Nettapus auritus*; White-faced Tree Duck, *Dendrocygna viduata*; and Fulvous Tree Duck (better known as Whistling Teal), *Dendrocygna bicolor*—these last two would have been caught more often if the dams they frequent had been regularly netted.

(*c*) The Fisheries Officer of the Lake Victoria Fisheries Service for the Tanganyika section of the Lake tells me how he watched a Fish Eagle, *Cuncuma vocifer*, stoop at a large fish on the surface. The bird got its talons into the fish, but it was too big to be lifted and carried away and the eagle was dragged below the surface. The struggle went on for about ten minutes and eventually the fish died and the eagle was drowned. The

fish was a large *Clarias* and the eagle an adult.

During the 25 years I was Game Warden of Uganda at least half a dozen similar tragedies were reported to me, usually by officers of the steamers which served Lake Victoria. The fish concerned were either *Clarias* or *Protopterus*.

Although not exactly preying on birds in the generally accepted sense, this is a form of bird wastage due, albeit unintentionally to a fish—a case of the biter bit.

(iii) Crocodiles

From the evidence available birds sometimes constitute a fairly important item in the crocodile's diet. A hungry crocodile will take any living prey large or small, except full grown elephants, as opportunity offers, and will lie in wait at places where flocks of small birds regularly drink or roost, and will also leave the water with a rush to seize an unsuspecting bird. With one exception all references are African and concern the Nile Crocodile, *Crocodylus niloticus*. I can find no reference to birds being preyed upon by the other African species—*Crocodylus cataphractus* and *Osteolaemus tetraspis*. During the past ten years hundreds of thousands of crocodiles have been slaughtered in Africa for the sake of their skins but, with one notable exception, no advantage has been taken of this slaughter to carry out a systematic investigation of crocodile stomach contents.

India. In a *Report on a Zoological Mission to India* (p. 26) in 1913, by Captain S. S. Flower, there is a reference to a specimen of the common Marsh Crocodile, *Crocodylus palustris*, which escaped from its enclosure at the Karachi Zoo and got into the waterfowl pond, where it seized and killed a black swan.

Africa: Sudan. According to Lt.-Col. Peter Molloy (Assistant Game Warden) when shooting, "a teal dropped into a crocodile infested pool was sometimes snapped up." Owen writes that "most Africans and Arabs will tell you that birds are taken and I know of one first-hand witness, whom I believe, of a Pelican actually being seized and dragged under."

Also, "On the Nile, where islands of reeds and papyrus often carry the odd ambatch or acacia bush, such a bush is sometimes swarming with a cloud of weavers, probably some kind of *Quelea*. I have seen a crocodile rise suddenly (it was a big one) under the bush, scaring the cloud of weavers off the low branches and propel himself forward with mouth wide open trying to engulf them as they dashed and fluttered away in a swarm. Whether it got much of a mouthful it was impossible to say."

On a tributary of the Atbara river he "saw a crocodile—maybe 7 feet or at most 8 feet—slowly approach a party of Cattle Egrets standing on the sand by the water's edge and then make a dash at them and whisk round at them with its tail. It missed."

Dr. Eric Wilson *in litt.*: "I came across two cases of crocodiles feeding on birds in the Sudan. In both cases the bird was the Sudan Dioch *Quelea q.aethiopica*, one in the rains the other in the dry season, though the circumstances were similar." In the former a 3-foot crocodile destroyed in a pool below a railway line culvert, close to a nesting colony of *Quelea* contained a mass of feathers and bird remains. "As these birds flutter down on to the surface of the water in flocks to drink, the crocodile

presumably opened its mouth and grabbed. It must have done quite well as its stomach was quite full.''

''The other case was a crocodile about 5 feet long in a large pool in the bed of the Dinder river alongside a large, dry season, *Quelea* roost. The birds here descended to the water in practically solid masses to drink just before going to roost in the evening and this crocodile was full of *Quelea* feathers and remains.''

The birds grabbed at by crocodiles ''when they attempted to drink'' described by Sir S. W. Baker on the banks of the Atbara river (see *Ibis* 1945, p. 424) were almost certainly *Quelea*.

Mr. J. M. Stubbs (Provincial Administration) has examined over 100 crocodile stomachs without coming across any bird remains.

Mr. D. Fyfe (Provincial Administration) saw a crocodile, estimated to be about 8 feet long, seize a ♀ Knob-billed Duck, *Sarkidiornis melanotos*. The bird was standing on a small islet within 1½ feet of the water's edge. The crocodile approached upstream, snapped up the bird with one crunch, opened its jaws with a tossing motion and swallowed its victim.

Mr. J. Nield Cameron (*The Field* 25th April, 1957) in a note headed ''Plover, Crocodiles and Duck'' writes ''I have several times shot duck which, falling in the water, were taken by crocodiles.''

WEST AFRICA. According to Mr. R. R. Glanville (Sierra Leone): ''Local information that the Nile Crocodile occasionally takes waterfowl, but I have no personal knowledge of it happening.''

The Director of the GOLD COAST Fisheries Department writes: ''I have not seen crocodiles taking birds, but I have found crocodile holes crammed with Egret feathers.''

UGANDA. There are really valuable data from Uganda as a result of systematic study by Mr. E. V. Hippel, (''Stomach Contents of Crocodiles,'' *Uganda Journal* 10: 1, 1946, pp. 148–49), and the researches of Dr. Hugh Cott (''The Status of the Nile Crocodile in Uganda,'' *Uganda Journal* 18 : 1, 1954, pp. 1–12).

Hippel examined 587 stomachs—293 ♂♂ and 294 ♀♀, of crocodiles trapped in Lakes Kyoga and Kwania. Birds were found in 38 (21 ♂♂: 17 ♀♀) stomachs, with one exception—a duck—the birds being Darters, *Anhinga rufa*.

Cott examined the stomach contents of:

Length in metres	0–1	1–2	2–3	3–4	4–5
Crocodiles	66	46	17	17	6
Birds in stomach	Nil	3	1	3	Nil
Percentage containing birds	Nil	6.5	5.9	17.6	Nil
Including some other known records with his own he lists:					
Crocodiles	69	52	46	32	40
Birds in stomach	Nil	3	4	4	1
Percentage containing birds	Nil	5.8	8.7	12.5	2.5

Cott has given me particulars of birds or bird remains taken from six crocodiles from Lake Victoria or the River Nile, near Jinja. In two (length 1.37 m. and 3.54 m.) there were feathers (*indet.*); in two (2.55 m. and 3.20 m.) *Anhinga rufa*; in one (3.25 m.) *Phalacrocorax carbo lugubris*; in one (1.73 m.) Weaver(?) feathers; and in the sixth feathers of *Anhinga* or *Phalacrocorax*.

Henley (Game Ranger) has frequently seen crocodiles taking wounded duck whilst shooting at the Longorokippi dam in Karamoja. He also writes: "You will frequently see a movement in the reeds and the duck flying for a short distance and this I have always put down to a crocodile stalking duck."

Mr. John Mills (National Park Warden) in the Murchison Falls region "saw crocodiles chasing Marabou Storks when the latter were taking both eggs and baby crocodiles. The crocodiles made short rushes at the marabous never covering more than about 20 feet. The crocodiles made these rushes both from the water and while resting on land, as soon as they saw the marabous getting close to the eggs or young. The crocodiles had their mouths open and looked very angry. The marabous while keeping an eye on the crocodiles did not appear to be over-worried and just hopped out of the way."

Although this can scarcely be described as preying on birds, it is interesting.

In 1956, an angler trolling from a launch for Nile Perch, *Lates niloticus* near the Murchison Falls had his large plug bait seized by a Fish Eagle, *Cuncuma vocifer*—which happens occasionally. As the bird was unable to rise off the water the launch was manoeuvred towards it and when within six feet a crocodile suddenly appeared, came in with a rush and took it—rod, reel, line and all! The following day a dead chicken was towed behind the launch past some crocodiles. It was immediately taken.

In the Uganda Game Department's Annual Report for 1930, it is recorded that a crocodile was seen to seize a Darter, *Anhinga rufa*, in the Victoria Nile.

That the crocodile does not always make the most of its opportunities is instanced by the experience, in 1934, of Mr. W. J. Eggeling, of the Uganda Forest Department, who witnessed the extraordinary spectacle of a crocodile on a mudbank in Lake Albert surrounded by Knob-billed Ducks, four of which were actually perched on its back! It was not until the birds started craning their necks at the intruder that the crocodile moved. (*Uganda Game Dept., An. Rep.* 1934, para. 253).

KENYA. Mr. C. W. Hobley (Provincial Administration) in an early volume of the *Journal East Africa and Uganda Nat. Hist. Society*, tells of shooting a duck which fell in a river, and when he waded in to recover it a crocodile took it from within 20 feet of him.

Fuchs had a similar experience on Lake Baringo. He had waded in to recover a shot goose when a crocodile swimming on the surface beat him to it in spite of a shot fired at it.

Cott informs me that Mr. F. Wilson has in Lake Victoria, twice found a Cormorant in a crocodile, and once an unidentified bird.

(*to be concluded*)

Remarks on some genera of *Turninae*

by MR. DEREK GOODWIN

Received 30th March, 1957

In the course of examining and re-arranging the *Turninae* in the collection of the British Museum (Natural History), some taxonomic conclusions

were arrived at which differed from those of recent workers on this group. Most of the following notes consist of reasons for these conclusions, particularly where they disagree with those published by Ripley (1952) in his important but rather synoptic revision.

Drymodes

Ripley seems to be correct in thinking this genus best placed in the *Turninae*. Whittell and Serventy (1948) placed it, together with *Cinclosoma*, in the family *Cinclosomatidae* although in another publication (Serventy and Whittell 1948) they included both *Drymodes* and *Cinclosoma* in the *Timaliidae*. Although its shape and long, strong legs are somewhat similar to those of some Timaliine birds, its spotted young, its strong resemblance to *Erythropygia* and what little has been recorded of its habits (Mathews 1922) all suggest that the affinities of *Drymodes* are with the thrushes rather than the babblers. It may be a small point but *Drymodes* is said to walk and run; many of the thrushes both walk and hop, whereas I have seen no record of any babbler walking.

The resemblance between *Drymodes* and *Cinclosoma* might well be due to convergence rather than relationship, though the possibility that the latter also might be related to the *Turninae* rather than to the *Timaliidae* should be borne in mind. Many Australian land birds belonging to different orders (e.g. passerines, pigeons and parrots) show striking similarities of shape, plumage and colour-patterns which can only be due to convergence. It is necessary, therefore, to be cautious in interpreting resemblances between allopatric species of the same order.

Erithacus

Ripley's enlarged conception of this genus may ultimately prove to be correct, but further research is required to show whether, in fact, the genera that he included under *Erithacus* are more closely related to each other than they are to other small *Turninae*.

A better case could be made out for uniting *Luscinia* with *Erithacus*. Lack (1953) gives reasons for provisionally maintaining them as separate genera. If this is done the question is posed as to whether the Japanese Robin *akahige* (Temminck) and the Black-breasted Robin *komadori* (Temminck) should be placed in *Erithacus* or *Luscinia*. Lack, following Hartert, thought them best placed in *Luscinia*, pointing out that in addition to the slight differences in feather shape, they lack the ticking alarm call of *Erithacus rubecula* and that they have some Nightingale-like calls and songs (Jahn 1942). On the other hand, Vaurie (1955) placed them in *Erithacus* because of the great resemblance of the colour-pattern of *komadori*, and both colour and colour-pattern of *akahige* to *rubecula*. I think Vaurie is right. The only two living specimens of *komadori* that I have seen struck me as extremely like *E.rubecula* in movements and appearance. It is probable that more detailed study of these two species will prove them to be connecting links illustrating the close phyletic affinity of *Erithacus rubecula* and the *Luscinia* species. In the meantime it seems to be slightly better to include them in *Erithacus*.

Incidentally, too much importance should not be attached to the sexual dimorphism of *E.akahige* and *E.komadori* and the apparent lack of it in *E.rubecula*. The Robin does show some tendency to a similar sexual dimorphism. If Robins from the same geographical area and in similar plumages are compared the orange on the breast is usually paler in the

females than in the males. This difference is apparent in life. In fact it was when watching courtship-feeding in paired Robins that I first observed it. In a pair standing side by side the cock almost always appeared brighter than the hen.

Chaimarrhornis and Rhyacornis

In my opinion Ripley is not justified in putting the water-redstarts in the genus *Phoenicurus*. The White-capped Water-redstart *Chaimarrhornis leucocephala* (Vigors) does not closely resemble any *Phoenicurus* in detail of colour or colour-pattern. Nor, apparently, does it quiver its tail in the characteristic redstart manner. Two that I observed in captivity some years ago had a more wheatear-like tail movement. The eggs are unlike those of most redstarts and there is no sexual dimorphism as in *Phoenicurus*.

The Plumbeous Water-redstart *Rhyacornis fulifinosus* (Vigors) more closely resembles *Phoenicurus* species in its colouration and in being sexually dimorphic but the type of sexual dimorphism shown is quite unlike that of *Phoenicurus*. It differs also in the unmarked chestnut tail of the male, in the markings of the female, in not having the same tail movements as *Phoenicurus* and in the colour of its eggs. Therefore, there seem to be no sound reasons for supposing the water-redstarts to be more closely allied to the typical redstarts than they are to other genera such as *Oenanthe*, *Saxicola* and *Saxicoloides*.

It is tempting to put the three water-redstarts all in one genus but I do not think the present evidence justifies doing so. Such resemblances of habit and behaviour as have been recorded for the White-capped and Plumbeous Water-redstarts may be due to convergant adaptation to similar habitats. Superficially the Philippine Water-redstart *Rhyacornis bicolor* (Ogilvie Grant) appears to be a connecting link between them. It is similar to, although darker than the male Plumbeous Water-redstart in colour, the distribution of chestnut on its underparts is intermediate between that of the other two species and it shows only slight sexual dimorphism. Also it is a little larger than the Plumbeous Water-redstart.

Closer examination of the Philippine Water-redstart suggests that its affinities are with *R.fuliginosus* and that its approach to some of the characters of *C.leucocephala* may be due to convergence, or, perhaps, may be purely fortuitous. Although in colouration the female is otherwise simply a dingy and pale edition of the male she differs from him in having dark greyish-sepia instead of chestnut tail feathers. This to my mind is evidence of close relationship with the Plumbeous Water-redstart in which the male's tail-feathers are chestnut and those of the female dark-greyish sepia and white. It seems to me that the Philippine and Plumbeous Water-redstarts are closely related, the latter having, subsequent to their divergence from a common stock, evolved in the direction of the acquisition of male plumage by the female. In the British Museum collection, therefore, these two species have been placed together in the genus *Rhyacornis* and the White-capped Water-redstart left in the now monotypic genus *Chairmarrhornis*.

Pinarochroa

This genus consists of the single species *P.sordida* (Ruppell) which Ripley united with *Cercomela*. In appearance and such of its behaviour as has been recorded it would seem to be at least as closely related to *Oenanthe*.

Until its affinities are more certain it is preferable to keep it as a monotypic genus.

Platycichla

The same remarks as above apply to Ripley's treatment of the genus *Platycichla* which he placed in *Turdus*. The single species *Platycichla flavipes* (Vieillot) is very like the Blackbird *Turdus merula* Linnaeus in its colouration and type of sexual dimorphism but it differs from *Turdus* in its shorter legs and bill. Also Dr. David Snow, who has watched this species alive in Trinidad, tells me that it did not strike him as being at all like a thrush or blackbird in its appearance and behaviour. It seems therefore preferable to maintain the genus *Platycichla*.

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Variant Patterning in the Robin and the Bullfinch

by Dr. James M. Harrison

Received 26th February, 1957

I have stressed in various communications (*antea* LXVI: 32, 69; 73:37–40; Proc.Xth.Int.Orn.Congress, 1950, 167–172; and with Dr. Jeffery G. Harrison, *antea* 76:125–6 and 133) the possible evolutionary significance of modifications in pattern in various species of birds.

This communication deals with a variation in the Robin, *Erithacus rubecula* (Linnaeus) and in the Bullfinch, *Pyrrhula pyrrhula* (Linnaeus). In so far as the first species is concerned, this communication is based upon the same two specimens which formed the subject of my previous note (*antea* LXVI, 69). This variant, in which the lower third of the gorget is replaced by a greyish black band, as is found in the Japanese Robin, *Luscinia akahige*, has now been recorded from Kent by myself, from Scotland and Lancashire by Mr. P. A. Clancey (*British Birds*, XXXIX, 281–2), from South Wales by Dr. Bruce Campbell (ibid. 375) and from Yorkshire by Dr. W. H. Inman (ibid., XL, 179). At the time of going to press, I have seen a further example in Sevenoaks during May, 1957. It may conveniently be referred to as *Erithacus rubecula* var. "*Luscinia akahige*" and further details of this interesting variant need not be repeated in this paper.

While working recently on the Bullfinch, *Pyrrhula pyrrhula*, I have once again met with an instance of modification of pattern in two males of British origin, which show broadly speaking the pattern of a Far Eastern

form, *P.p.griseiventris* Lasfraynes. One of the two was obtained on 12th February, 1950, at Pitlochry, Perthshire, Scotland (Bolton Museum collection), while the other was collected by the late Colonel W. A. Payn on 10th January, 1936, on Salisbury Plain, Wiltshire (British Museum collection, Reg. No. 1951–13–3116).

As with all such variants, in some the condition is minimal, while in others a maximal and very striking expression is seen. In the form *P.p.griseiventris* there is a well marked pattern contrast between the red of the throat and ear-coverts and the rest of the underparts. In the specimen with which the comparisons were made, the throat is Fiesta-Crushed Strawberry (Maerz and Paul, *Dictionary of Color*, Plate I, 10.1) and the grey of the rest of the underparts is nearest to Pearl Grey Shell (loc. cit. Plate 44, 1, A), though a trifle darker.

The following description refers to the specimen collected by Colonel Payn. The same contrast exists between the throat and ear-coverts, which match very closely Samurai (loc. cit. Plate 4, II, H) and the underparts, which are largely Cobweb (Plate 5, 7, B). This tone extends across the upper breast and partly on to the flanks, being mixed however with Samurai to a varying extent. The mantle of this bird shows the faintest pinkish suffusion. The Pitlochry specimen shows the variation to a minimal extent, by a slight mottling of the underparts with Cobweb.

This condition in European specimens of the Bullfinch may conveniently be referred to as *Pyrrhula pyrrhula* var. "*P.p.griseiventris*," and provides a further instance of autophoric reverse variation.

Some comments upon the subject matter of this and other previous communications are called for as the result of criticism of the use of the term "mutation." In a letter from Mr. W. R. Sims (12.III.'57) it is stated that such variants are not "mutations." In the strict genetic sense this is true and admitted, while of course the term was not used by me in the strict genetic meaning. It has moreover been used rather more loosely for a considerable time in general ornithology to denote an inheritable state, usually as a result of the recombination of recessive genes.

Although the strict genetic interpretation of the term "mutation" may be inapplicable to such instances of discontinuous variation as those described, in which a striking variant appears within a normal population, it would seem certain that such are the result of a genetic process and are inheritable. Moreover the definition of "Discontinuous Variation"—"A mutation, or sudden heritable variation" (Knight, 1948, *Dictionary of Genetics*, p. 44) could well be regarded as justification for a wider interpretation of the term "mutation" in general zoology. It is in this sense that the term has been employed in the examples recorded to date. In deference to these views however, the term "variant" will be used in such instances in future communications.

I would express my appreciation to Mr. J. D. MacDonald, Director of the Bird Room, British Museum, for the loan of specimens and to Mr. Alfred Hazelwood, of the Bolton Museum, for similar facilities.

Taxonomic Notes on the Lesser Coucal, *Centropus bengalensis*

by Dr. Kenneth C. Parkes

Received 17th March, 1957

In connection with studies based on a collection of birds made in Luzon, Philippine Islands, in August and September, 1956, it has proved desirable to present certain preliminary taxonomic findings prior to the appearance of the principal report upon the collection. The specimens, now in Carnegie Museum, were taken during the course of an expedition of the Graduate School of Public Health, University of Pittsburgh, under the sponsorship of the Commission on Viral Infections, Armed Forces Epidemiological Board, and supported in part by the Office of the Surgeon General, United States Department of the Army. Studies for the present paper were made at the American Museum of Natural History and United States National Museum through the courtesy of Dean Amadon and H. G. Deignan, respectively.

The Lesser Coucal, *Centropus bengalensis*, is a medium-sized (wing-length of males 125–177 mm., of females 150–205 mm.), chiefly terrestrial cuckoo, widely distributed in south-east Asia. Grant and Mackworth-Praed (*Bull.B.O.C.* 59: 51, 1939) consider this species and *C.grillii* of Africa to be conspecific with *C.toulou* of Madagascar. I do not believe that our present knowledge of these birds warrants this step, although I acknowledge the possibility of such a relationship. The continental *grillii*, although very small, resembles the distant *bengalensis* in all stages of plumage far more closely than does the geographically intermediate *toulou* of Madagascar. The immature plumages of *toulou* show certain resemblances to the Asiatic *sinensis* group which must be interpreted before any definitive statement of relationships can be made. For the time being, and pending a thorough distributional history of the entire genus *Centropus*, I follow Peters (*Check-list of Birds of the World* 4: 71–73, 1940) in considering *bengalensis*, *grillii* and *toulou* as three species.

Deignan (*Proc.Biol.Soc. Washington*, 68: 146, 1955) has correctly shown that the Philippine population of *Centropus bengalensis* is subspecifically separable from *javanensis*, with which it had been placed by previous authors. For these Philippine birds Deignan revived the name *molkenboeri* Bonaparte (*Consp.Av.* 1: 108, 1850) with a very brief diagnosis, which can be amplified considerably. The subspecific characters of *molkenboeri* as compared with *javanensis* are as follows: black feathers of the head and underparts with less blue iridescence, thus at a minimum for the species as a whole; scapular and interscapular areas much darker, less rufescent, and contrasting less sharply with the black of the head (again an extreme condition for the species); light central shaft-streaks of these mantle feathers more abundant, and contrasting more with the dark webs; wing coverts more heavily marked, again with more contrasting shaft-streaks; black markings on primaries and outer secondaries more extensive, tending toward definite barring, especially of secondaries.

Deignan assigned the population of Palawan to *javanensis*, but his material from that island was inadequate. Examination of the excellent

material at the American Museum of Natural History shows that Palawan birds are inseparable from *molkenboeri*. Other islands from which specimens of *molkenboeri* have been examined include Luzon, Fuga, Mindoro, Negros, Cebu, Leyte, Siquijor, and Mindanao. Specimens from the Sulu Archipelago, however, are clearly *javanensis*. Since the only locality given by Bonaparte for *molkenboeri* is "Philippines," and since the Sulu Islands are (at least politically) part of the Philippines, it would appear desirable to restrict the type locality of *molkenboeri* to Luzon.

Size in *Centropus bengalensis* (for measurements, see Stresemann, *Novit.Zool.*, 19: 336–339, 1912) increases from west to east along two lines: nominate *bengalensis* (India east to Hainan) < *lignator* (southeastern China and Formosa; not recognized by Deignan, loc. cit., but appears to be a good race); and *bengalensis* < *chamnongi* (central Thailand south to northern Malay Peninsula) < *javanensis* (southern Malay Peninsula to Greater Sunda Islands and Borneo) < *sarasinorum* (Lesser Sunda Islands and Celebes) < *medius* (Moluccas). The Philippine race *molkenboeri* is similar in size to *javanensis* and undoubtedly represents a northern offshoot of that race, since it is abruptly different from its next northern neighbour, *lignator* of Formosa.

The interrelationships of certain of the species of *Centropus* in the Philippines present some fascinating evolutionary problems; among other things, a quite satisfactory hypothesis can be erected to account for the development of the characters which are used above to define the subspecies *molkenboeri*. This will be discussed elsewhere; the purpose of the present note is to introduce the combination *Centropus bengalensis molkenboeri* into current taxonomic literature so that it may be used without burdensome explanation in forthcoming papers.

Tunstall's Ornithologia Britannica 1771

by Capt. C. H. B. Grant and Mr. C. W. Mackworth-Praed

Received 31st March, 1957

In *Bull.B.O.C.* 77, p. 49, 1957, we enumerated four of Tunstall's names that need replacing. Monsieur Noel Mayaud, in a letter to us dated 5th March, 1957, has very kindly pointed out that a more definite type locality for *Falco communis* Gmelin should be given and also that *Falco lithofalco* Gmelin, *Syst.Nat.* 1, p. 278, 1788, is a valid name for the western race of the Merlin and antedates *F.c.alaunicus* Fedinsin, 1927.

We have verified these references and descriptions and as Gmelin under *F.communis* first refers to Brisson, *Orn.* 1, p. 341, 1760, where this author describes a specimen then in the Musee d'Aubry of France, we propose to give France as the type locality of *Falco communis* Gmelin; and as Gmelin under *F.lithofalco* first refers to Brisson, *Orn.* 1, p. 349, 1760, where this author describes a specimen then in the Musee Reaumurs of France, we propose to give France as the type locality of *Falco columbarius lithofalco* Gmelin.

We have to thank M. Mayaud for kindly drawing our attention to these matters and urging us to publish them as soon as possible.

A New Race of Pink-Billed Lark *Calandrella conirostris* from Northern Bechuanaland Protectorate

by Mr. Michael P. Stuart Irwin

Received 9th April, 1957

Calandrella conirostris crypta new race.

Description: Nearest to *Calandrella c. damarensis* (Roberts) but with the centres to the feathers on the mantle darker brown, broadly edged with cold stone grey tinged buff, lacking any rufescent suffusion on the back. Marked pinkish buff suffusion on breast and abdomen, in this respect approaching *C.c.conirostris* (Sundevall) and *C.c.barlowi* (Roberts). Streaking on breast similar to that of the nominate race, in contrast to the reduced size of the dark feather centres of *damarensis*.

Wing 73–75; Tail 39–45; Culmen 11–12; Tarsus 16.5–17.5; Hind claw 6–8 mm.

Type: Female, adult. Mumpswe, 7 miles north of the Makarikari Salt Pan complex and 15 miles west of Nata, northern Bechuanaland Protectorate. Collected by Michael P. Stuart Irwin, 15th September, 1954, on C. S. Barlow Bechuanaland Protectorate Expedition. Collectors No. BP/25; National Museum Registration No. 18692. Type in the National Museum of Southern Rhodesia, Bulawayo.

Measurements of the Type: Wing 73; Tail 39; Culmen 11; Tarsus 17; Hind claw 8 mm.

Distribution: Only so far known from the type locality, a notable extension to the known geographic range of the species.

Remarks: This new race is based on a series of four males and one female in fresh plumage, *collected in September and October 1954, in company of large flocks of Finch Larks, *Eremopterix verticalis* and *E.leucotis* and a few *Calandrella cinerea*, coming down to drink at pans on open short grass plains. These pans had gentle inwardly inclining approaches, almost devoid of vegetation over an area of several hundred yards in diameter, and being covered in very stony ground resultant of the trampling action of large herds of game animals, the subsequent wind acting having removed the dust thus created.

On such terrain these small larks were abundant. When on the ground they were virtually invisible, due to their cryptic colouration, and on alighting would immediately conceal themselves directly behind a stone, only arising at ones approach, making no attempt to run along the ground to seek cover.

The species as a whole must be very local and undoubtedly subject to much seasonal movement. It was not obtained on a previous expedition to the area in 1953, nor on subsequent visits in 1955 and 1957 in both the dry and wet seasons.

Acknowledgements: My thanks are due to Mr. R. H. N. Smithers, Director of the National Museum, for drawing my attention to this new race, and to the authorities to the Transvaal Museum, Pretoria, for the loan of comparative material.

* 2 ♂♂, 1 ♀ collected 22-25 April, 1957, *by* W. R. Rankine from the type locality.

A New Race of Marico Flycatcher *Bradornis mariquensis* from South-West Africa

by Mr. Michael P. Stuart Irwin

Received 9th April, 1957

Bradornis mariquensis acaciae new race.

Description: Differs from nominate *mariquensis* Smith in having the forehead, crown and back suffused with rust red, giving a "foxed" appearance; secondaries and wing coverts edged with reddish brown on their outer webs, not fawn. Three fresh plumaged specimens examined. Wing 84–89; tail 76–80; culmen 16–17 mm.

Type: Male, adult. Ohopoho, Kaokoveld, South-West Africa. Collected by the Bernard Carp South-West Africa Expedition, 29th June, 1951. Collectors No. 223A; National Museum Registration No. 28207, Type in the National Museum of Southern Rhodesia, Bulawayo.

Measurements of the Type: Wing 87; tail 79; culmen 17 mm.

Distribution: Only so far known from the Kaokoveld: material from Windhoek and the Ghanzi district of the Bechuanaland Protectorate are of the nominate form.

Acknowledgements: My thanks are due to the authorities of the Transvaal Museum, Pretoria, for the loan of comparative material.

The Southern Grey-headed Races of Livingstone's Flycatcher, *Erythrocercus livingstonei* G. R. Gray

by Mr. Michael P. Stuart Irwin

Received 28th March, 1957.

The grey headed populations of Livingstone's Flycatcher *Erythrocercus livingstonei* are currently grouped under the name of the nominate form, but it has become evident in the light of recent material from the Zambezi Valley and southern Portuguese East Africa, that two discrete populations are involved, separable on well-defined characters.

The coastal population, ranging from the region of Netia and the Monapo River, westwards to Liwonde and Port Herald in Nyasaland, south-westwards to the region of Tete and Tambara, and southwards to Gorongoza Mountain and Inhambane. These birds are distinguished from the nominate form in having the yellowish suffusion on the back less in evidence, making the green on the mantle appear darker; sulphur yellow tinge on rump less strongly developed; tail with broad black subterminal bar across the webs of the six central rectrices, not divided into separate spots on either web. In this tail character, it is thus similar to *E.l.thomsoni* Shelley *P.Z.S.* p. 303, pl. 16, fig. 2, 1882: Rovuma River, Tanganyika Territory–Portuguese East African boundary; but all the austral birds are at once distinguished in not having the crown of the head green, concolorous with the back, but grey.

For these southern coastal birds, the name *E.l.francisi* W. L. Sclater, *Bull.B.O.C.* 7, p. 60, 1898: with type locality Inhambane, is available; of which *E.l.monapo* Vincent, *Bull.B.O.C.* 53, 1933: p. 137, is a synonym.

The typical form was described by G. R. Gray in Finsch and Hartlaub's

Vög.Ostafr. p. 303, 1870; with type locality Zambezi River. It has the back green with a yellowish suffusion, rump with a sulphur yellow tinge, the tail bar reduced to two black subterminal spots on either side of the webs, and though these spots are variable in size, they never coalesce to form a bar. The range of this form is from approximately somewhere in the region of Tete (a male from 30 miles north of Tete is *E.l.livingstonei*), westwards up the Zambezi River as far as the junction of the Sebungwe River in Southern Rhodesia, below the Victoria Falls gorges and up the Luangwa Valley in Northern Rhodesia as far as Petauke.

It now becomes desirable to restrict the type locality of the nominate form, for as at present designated, it covers both the geographical area inhabited by *E.l.livingstonei* and *E.l.francisi*. Capt. C. H. B. Grant (*in litt*) has suggested, however, that Zumbo, on the border between Portuguese East Africa and Northern Rhodesia, should be taken as the restricted type locality and with this I am in agreement. In actual fact there is no means of really knowing where within its range that the actual type was obtained. Zumbo is, however, fairly central within the distribution of the nominate race, and on Livingstone's route of his expedition of 1858–64, where he spent a considerable time.

In preparing this note my thanks are due to Captain C. H. B. Grant, who has made several useful suggestions as well as helping to map out the ranges of the different races.

Notes on African Larks—Part V

by Mr. C. M. N. White

Received 9th February, 1956

Calandrella cinerea

On 6th December, 1956, Mr. C. W. Benson and myself encountered a flock of *Calandrella cinerea* in the Southern Province of Northern Rhodesia at Monze. The date was unusual for the species is very largely a dry season breeding visitor to Northern Rhodesia mainly between May and September, and the birds were very wild and in their behaviour reminded one of the migratory flocks of larks in Europe. A series was obtained, and it was at once apparent that they were not *C.c.saturatior* Reichenow, the only form hitherto known from Northern Rhodesia.

Several of the birds were still in juvenile plumage and it is interesting to note that a bird still wholly in juvenile plumage with only a trace of moult into adult plumage had the skull 75% pneumatised; another in which the rufous breast patches and a few feathers of the upperside have moulted to adult plumage had the skull wholly pneumatised. The juvenile plumage is thus worn for some time in this species, possibly up to about six months after hatching. Adults still show traces of old plumage although almost completely moulted; from these it appears that the centre tail feathers are the last feathers to be renewed at moult.

In identifying these birds it has been necessary to re-evaluate the various races of this lark currently recognized. Macdonald reviewed the races in outhern Africa in *Annals of the Transvaal Museum*: 1952, xxii, 29–32.

From an examination of the series in the British Museum and an additional forty skins in my own collection, I think he recognized too many races. I cannot separate *witputzi* Macdonald from typical *cinerea*, nor *niveni* Macdonald from *anderssoni* (Tristram). Birds from the Cape Flats recently collected do not differ from birds from other parts of the Cape Province ascribed by Macdonald to *witputzi*; typical *witputzi* from near the Orange river mouth are a trifle paler than others from the Cape Province but not sufficiently distinct to justify separation.

Like most previous writers on the species I find the difference between *cinerea* and *anderssoni* comparatively slight; the latter is rather richer and warmer above and generally more strongly streaked with blacker streaking; single specimens of one race match the other. A series in the British Museum from Gobabis is unusually strongly streaked above, but specimens in my collection from Omaruru are less streaked and match others from Monze and the western edge of Southern Rhodesia.

The series from Monze agrees well with *anderssoni*, and is the first record of this race from Northern Rhodesia. The question arises as to whether they are resident or migrants in this area. Most birds in Southern Rhodesia are *saturatior* but in the dry country about Bulawayo both *saturatior* and *anderssoni* occur and the two races may well merge there. All other Northern Rhodesia birds agree with *saturatior* except a breeding bird from west Balovale which agrees with *anderssoni*. It is at least possible that *anderssoni* is the breeding race in the south-west of Northern Rhodesia on dry sandy soils resembling Bechuanaland but more collecting is required to prove this. The behaviour of the Monze birds recalled migrant larks but the presence of many in juvenile plumage may be evidence of local breeding.

Of the other races currently recognized, I find *spleniata* (Strickland) a very well marked race of the Namib; *ongumaensis* Grant and Praed is unsatisfactory, for as Macdonald pointed out, dark birds also occur at Etoscha Pan. The series in the British Museum is somewhat abraded and until freshly moulted birds are available from Etoscha Pan I should not recognize *ongumaensis*. *C.c.williamsi* Clancey from the Kenya highlands I regard as a valid race very like typical *cinerea* but darker, and lacking the warm tones of *anderssoni*. I have not studied the races of Ethiopia and Eritrea.

I see little advantage in making either *brachydactyla* or *blanfordi* conspecific with *cinerea*. The Palaearctic Short toed Lark does not intergrade with *cinerea* and exhibits specific characters as good as those which distinguished many allied species of larks. *C.blanfordi* is much smaller than either, although it is a bird of high altitudes and might therefore be expected to be as large as *cinerea* or slightly larger. The races of *cinerea* all fade into each other, but there is evidently a very sharp transition from *cinerea* to *blanfordi*. The three species may well be a super species although convergence among larks is so widespread that even this may well be regarded as merely a probability. Until more evidence is available of what happens where *cinerea* and *blanfordi* meet I propose to treat all three as separate species.

PURCHASED
- 3 OCT 1957

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DINNERS AND MEETINGS FOR 1957

15th October, 19th November, 17thDecember.

SEPARATES

Contributors who desire free copies of the Bulletin containing their notes should state so on their MS., otherwise these will not be ordered These will be supplied up to a maximum of fifty.

PUBLICATION OF THE "BULLETIN"

Members who make a contribution at a Meeting should hand the MS. to the Editor at that Meeting. As the proofs will be corrected by the Editor, it is essential that the MS. should be correct and either typed or written very clearly with scientific and place names in block letters. The first mention of a scientific name should be spelt out in full, i.e., genus, specific name, racial name (if any), and author. Any further mention of the same name need only have the initial letter of the genus and no further mention of the author.

If no MS. is handed to the Editor at the Meeting, a note will be inserted mentioning the contribution.

BLACK AND WHITE ILLUSTRATIONS

The Committee have decided that in future the Club will pay for a reasonable number of black and white blocks at the discretion of the Editor. If the contributor wishes to have the blocks to keep for his own use afterwards, the Club will not charge for them, as has been done in the past.

Communications are not restricted to members of the British Ornithologists' Club, and contributions up to 1,500 words on taxonomy and related subjects will be considered from all who care to send them to The Editor, Dr. J. G. Harrison, "Merriewood", St. Botolph's Road, Sevenoaks, Kent.

Communications relating to other matters should be addressed to the Hon. Secretary, N. J. P. Wadley, Esq., 14 Elm Place, London, S.W.7.

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BULLETIN
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The five hundred and fifty-ninth meeting of the Club was held at the Rembrandt Hotel, S.W.7, on Tuesday, 15th October, 1957, following a dinner at 6.30 p.m.

Chairman : Mr. C. W. Mackworth-Praed.

Members present, 33 ; Guests 8 ; Guests of the Club, Mr. and Mrs. R. Darnton ; Total : 43.

Film of West Indian Birds

Mrs. Iris Darnton showed a most excellent film and has kindly provided the following summary :—

We spent last winter in Trinidad, Tobago and Bonaire, and our film opens with various scenes taken round the lovely coast of Tobago and of the even more lovely hills and valleys of the island itself. When we were there, these valleys and hillsides were aflame with the spectacular flowers of the Erythrinas grown for shading the cocoa, and from many of these trees hung the long pendulous nests of the Yellow-tails (*Ostinops decumanus*) whose activities we filmed.

We also found a Hairy Hermit Humming Bird (*Glaucis hirsuta insularum*) attaching her nest with cobwebs to the tip of a hanging palm frond—a difficult subject for the camera as the nest was only lit for ten minutes or so in the early morning. Unfortunately this lack of good lighting formed a problem throughout Trinidad and Tobago, as many of the most beautiful birds of these islands such as the Red capped Manakins, the Mot-mots, the Jacamars and the Trogans are birds of the shadows, and so are impossible to photograph satisfactorily.

However, when we went to Bonaire this problem did not arise, for instead of dense tropical vegetation and tall forests, we found comparatively desert-like conditions—only trees and plants resistant to a very low rainfall being able to survive. Here in this tiny island we were fortunate in finding a colony of the Red Flamingo (*Phoenicopterus ruber*) actually nesting. This was extremely lucky for normally they do not nest until May and we were there in early March. In fact we found several thousands of young birds of various ages already running about in great grey flocks, while some of the adults were still sitting on eggs. This species of flamingo is undoubtedly the most beautiful and is said to be also the rarest, and we were so entranced by their beauty that we used to get up at 5 a.m. every morning so as to be at their feeding grounds just after dawn. To almost live among these lovely birds as we did for a fortnight, we felt was indeed a privilege we shall never forget.

Further Notes on Aquatic Predators of Birds

by Captain Charles R. S. Pitman

Part III.

Tanganyika. Lockley, on Lake Rukwa, has seen a crocodile take an adult Spur-winged Goose, *Plectropterus gambensis*; it was pulled under.

Mr. G. M. Swynnerton (Game Warden), also on Lake Rukwa, has seen a Spur-winged Goose, winged by a shot, taken by a crocodile, and on two separate occasions a Pelican, which was pulled down and held by its legs until it was drowned. He also saw a crocodile take a Fish Eagle, *Cuncuma vocifer*, which had been beaten to the water by another of the same species in combat until it was exhausted and its wings waterlogged.

In *The Third Book* by "Rufigi," referring to crocodiles: "take many birds when they get the opportunity. . . . I do know they catch numbers of their (darters or cormorants) fledglings when they are learning to fly and take off from the water below their rookeries in trees."

Nyasaland. Paul Potous in *No Tears for the Crocodile* (1956) pp. 154–5: "The remains of birds are sometimes found in the stomachs of dead crocodiles, but seldom does one have the opportunity of witnessing a crocodile in the act of taking a bird" . . . "I winged a duck which continued to fly and then fell dead into the water a short distance ahead . . . a crocodile surfaced close by and grabbed it." "A friend . . . determined not to lose a duck which had fallen into the water . . . and swam out to collect the dead bird. He had nearly reached it when a crocodile rose to the surface just ahead of him, snapped it up and remained floating with the bird in its mouth."

Northern Rhodesia. Mr. R. I. G. Attwell (Biologist) reports, from the Luangwa river, an Egyptian Goose, *Alopochen aegyptiacus* taken by a crocodile, and on another occasion a Knob-billed Goose, *Sarkidiornis melanotos*. At a pan in the Luangwa valley he saw an adult Wood Ibis, *Ibis ibis*, taken in flight by a crocodile, and two juvenile Wood Ibis while feeding in the shallows. In *Ibis* 1954, p. 485, Attwell adds to the information already recorded about the crocodile's technique for catching *Quelea*.

Mr. W. H. F. Ansell (Game Ranger) writes: "I took from the stomach of a crocodile in the Kafue river some large white feathers which I believe to have come from a Pelican."

Mr. J. B. Shenton (Game Ranger) observed: "A crocodile which attempted to grab an Egyptian Goose on a Luangwa river sandbank, and only just missed."

"On another occasion when doing a river tour on the Luangwa disturbed a clutch of young Egyptian Goose chicks which fell victim to a crocodile as they were swimming away."

Cott (*in litt.*) recently "thoroughly examined about 125 crocodiles, but bird prey was remarkably scarce." Three in the Bangweulu region contained respectively—a duck, small olive feathers (weaver?) and a small bird, none of which was specifically determined. A crocodile killed in the Mweru wa Ntipa (Mweru Marsh) contained a waterhen (*indet.*); and in four from the River Zambezi there were cormorants (recorded by Hugh Voigt, a crocodile hunter).

South Africa. Correspondents in Zululand told Cott of ducks being taken by crocodiles, and of duck feathers found in a crocodile.

Dr. Walter Rose (*The Reptiles and Amphibians of Southern Africa*, 1950, p. 354) records: "At times a crocodile will take up its position beneath a low-hanging branch of a tree where a number of small bird are congregated. At a propitious moment it lashes out with its tail sweeping a number of feathered victims into the water where they are speedily snapped up (Stokes)."

This observation presumably refers to a crocodile when on land or in shallows, for it could not so use its tail when in the water.

R. E. Symons once shot an 8-foot crocodile which contained a recently swallowed Black Duck, *Anas sparsa*.

GENERAL. B. G. Lynn-Allen in *Shot-Gun and Sunlight* (1951), p. 34: "Crocodiles (and possibly big fish) will also assist in lightening our bag if disabled birds are left too long unattended."

(iv) MONITOR LIZARDS (*Varanus*)

The highly aquatic Nile Monitor is a well-known voracious predator of birds and their eggs, and one has only to watch these huge lizards digging up crocodiles' nests and gobbling the eggs—which they swallow whole—or young to realize the havoc they can create. On the Uganda islets of Lake Victoria I found many nests of the Black Crake, *Limnocorax flavirostra* concealed in bushes and up to a height of 5 feet above the ground. This I believed was protection from the attentions of the numerous monitors which frequented the islets. On the other hand, on islets and rocks where there were none of these predators, the Black Crake nested normally on the ground, in tussocks. Another interesting feature of these islands and islets was to find that wherever there was a crocodile breeding place the Water Thick-knee, *Burhinus vermiculatus*, laid its two eggs right amongst the ♀♀ crocodiles which guarded their buried "nests." In fact, I have often seen a brooding *Burhinus* within a few feet of one of these massive guardians. This, too, I believe safeguards the *Burhinus* nest from the many monitors which lurk around a crocodile breeding place.

One does not get much opportunity of examining monitor stomachs, so real evidence of this lizard's depredations is scanty.

WEST AFRICA: SIERRA LEONE. According to Glanville: "*V.niloticus* is generally held to prey on a wide variety of birds, but the only personal record is a hen taken by a large *Varanus* which raided my fowl run."

Mr. T. S. Jones (Dept. of Agriculture, Sierra Leone): "cannot remember finding bird remains in *Varanus*, although I have not examined many stomachs. *Varanus* Lizards are very common and must catch quite a few ground-nesting birds."

UGANDA. Henley writes: "I have on a number of occasions recorded monitor lizards eating birds. A monitor will frequently attack and kill chickens and I have also once come across a monitor with a young Jacana, *Actophilornis africanus*" (at Longorokippi dam, in Karamoja).

Sir Frederick Jackson *Birds of Kenya Colony and the Uganda Protectorate* 1, 1938, p. 415) describes how a large Water Lizard (*Varanus*) robbed a nest of *Burhinus vermiculatus*.

NORTHERN RHODESIA. An interesting episode is contributed by Major I. R. Grimwood (Assistant Director of Game and Tsetse Control) who: "witnessed an incident which demonstrated a definite enmity on the part of Pied Kingfishers towards a leguuan (Afrikaans name for *Varanus*). I

had been watching a leguuan on dry land at close quarters which eventually spied me and made off into a nearby creek with head and neck above water, craning up so as to be able to keep me in view above the low bank. Three Pied Kingfishers (*Ceryle rudis*), which had been sitting on the far bank, immediately flew up and began to attack the animal, two of them 'dive bombing' at a steep angle from opposite directions, while the third hovered overhead, dropping on it in the manner this bird uses in fishing. All three birds kept up continuous attacks for two or three minutes until the leguuan submerged. Each dive appeared to be pressed right home and I twice heard the animal struck, once by a 'dive bomber' and once by the bird hovering overhead.''

South Africa. According to Clancey ''The Nile Monitor eats large quantities of birds' eggs, and the Tree or Rock Monitor, *Varanus e.angusticeps* (a land species), also eats small birds' and other eggs. One which I observed in the eastern Transvaal was being mobbed by a whole party of small birds and they evidently recognized it as an enemy.'' He has no information on these lizards actually eating brids ''though they must obviously do so.''

Skead writes: ''I have not met cases of *Varanus* preying on birds, but they eat eggs whenever they can get them. They are such omnivorous feeders that they must surely take young birds.''

H. G. Symons writes: ''Definitely eat any ducklings or birds they can get hold of. I shot a *Varanus* in my fowl run with a two-months-old chicken in its mouth. Great egg-eaters of birds, large and small.'' He also wrote that the only Purple Gallinule, *Porphyrio alba madagascariensis* nest he ever found was cleaned out by *Varanus* before the full clutch was laid.

FitzSimons gives me an instance of ''a Leguuan, *Varanus niloticus*, preying on the eggs and young of the Jacana, *Actophilornis africanus*.''

According to Rose (p. 191) *V.niloticus* preys on the eggs, young and adults of Coot, Water-hen, Cape Quail, Swart Korhaan (Black Bustard), Hammerkop (*Scopus*) and domestic fowls; but eggs are preferred.

According to R. E. Symons *Varanus* Lizards ''are a curse here (Natal) as they are very fond of duck and fowl eggs; I shot one after it had gorged itself on my eggs.''

Many of my correspondents in Eastern and Southern Africa are convinced that monitor lizards prey on birds, without being able to provide the necessary evidence; but all are agreed that these lizards freely and greedily consume eggs.

(v) Chelonians

The soft-backed Turtles (*Cycloderma* and *Trionyx*) are sometimes carnivorous and carrion feeders, but I have obtained no evidence that they will take living birds.

In South Africa ''The Water Tortoise, *Pelomedusa subrufa* is carnivorous, and it is common knowledge that it catches small ducklings and goslings (F. Bowker, quoted by Hewitt, 1937)''; see *The Ostrich* xxviii, (1) January, 1957, p. 39, with ref. to young Shelduck, *Tadorna cana*. Ibid., p. 43, with ref. to the Egyptian Goose, *Alopochen aegyptiacus*: ''For young, the most serious menace is believed to be the Water Tortoise, especially at Fort Beaufort where these creatures abound.''

(vi) Amphibians

Large species of *Rana*, such as *R.adspersa* and *R.occipitalis*, are voracious and will take any suitable living thing which comes their way. Fitz Simons (South Africa) tells me that Bullfrogs, *Pyxicephalus* (*Rana*) *adspersus* "prey on ground-nesting birds, and we actually have in pickle a specimen which was caught in the process of swallowing a sizable chicken."

Mr. B. L. Mitchell records (*Nyasaland Agricultural Quarterly Journal*, 6, (2), 1946, pp. 30–31): "On one occasion I saw five hungry ducks evicted from a pond by one of these frogs (*Rana adspersa*) biting them under the water. The frog kept popping his head out to see how things were going, then he would go down again for another bite. He followed them right out of the water and they could not be induced to return."

Loveridge (*Jour. East Africa Nat. Hist. Soc.* 1947–48, *19*, 5 (89), 1950, p. 253) quotes Mitchell's account of the five hungry ducks, and also says: "The South African race has been known to take ducklings."

Rose (1950), p. 49, states: "Bull frogs . . . will gobble up such items as unwary ducklings."

I am greatly indebted to all those who have so kindly provided me with such a wealth of information based either on their own experience or on that of others, or who have drawn my attention to relevant references.

SUMMARY

Certain marine and freshwater vertebrates appear to be:

Habitual Predators of Birds

Marine	Freshwater
Leopard Seal, *Hydrurga leptonyx*	Nile Crocodile, *Crocodylus niloticus*.
Killer Whale, *Orcinus orca*	Silurids, principally *Clarias*
Tiger Sharks (*Galeocerdo*) and	Water Monitor, *Varanus niloticus*
White Sharks (*Carcharodon* and *Carcharhinus*)	Large-mouth Black Bass, *Micropterus salmoides*
Angler Fish, *Lophius*	

Prey

Penguins are the principal prey of the larger marine predators; waterfowl, particularly diving birds (*Anhinga* and *Phalacrocorax*), and, according to circumstances, *Quelea*, are preyed on by the Nile crocodile; waterfowl juveniles and weaver bird nestlings, by *Clarias* and Large-mouth Black Bass, both of which will rise to swallows; and the Water Monitor, *Varanus niloticus*, takes any eggs or young birds which it comes across, especially waterfowl and ground birds.

Besides Penguins, marine predators take Pelicans (*Pelecanus*), Gannets (*Sula*), Giant Petrel, *Macronectes giganteus*; Petrel, *Haloboena caerulea*; Petrel (*Pachytila*); King Shag, *Phalacrocorax atriceps*; and Mutton Bird (*Puffinus*).

The Nile Crocodile is also known to take Pelicans (*Pelecanus*); Spur-winged Goose, *Plectropterus gambensis*; Egyptian Goose, *Alopochen aegyptiacus*; Knob-billed Goose, *Sarkidiornis melanotos*; Wood Ibis, *Ibis ibis*; African Jacana, *Actophilornis africanus*; and Fish Eagle, *Cuncuma vocifer* (twice, when injured). Any injured bird falling in the water may be taken by a crocodile and, if not too large, by *Clarias*.

Clarias will also take *Anas undulata*, *Paecilonetta erythrorhyncha*, *Actophilornis africanus*, *Fulica cristata*, *Elanus caeruleus* (injured), *Stephanibyx coronatus* (injured), young Wagtail, and dead *Passer*, *Colius*, *Stigmatopelia* and *Amydrus*.

Bagrus docmac has taken a White-faced Tree Duck, *Dendrocygna viduata*; and *Protopterus aethiopicus* an Egyptian Goose and Lesser Moorhen, *Gallinula angulata*.

The true Barbels (*Barbus*) take nestlings, particularly weaver birds, which fall on the water, as do Eels (*Anguilla*) and also perhaps *Heterobranchus longifilis*.

Tiger Fish (*Hydrocyon*) perhaps and Giant Perch (*Lates*) sometimes take birds, including goslings. In East Africa, the introduced Brown Trout, *Salmo trutta*, will take nestling weavers when they fall on the water, and the Rainbow Trout, *Salmo irideus*, which will rise to Swallows, probably does likewise.

In South Africa, the Large-mouth Black Bass, *Micropterus salmoides*, has taken *Anas sparsa* and Muscovy ducklings, *Fulica cristata* chicks, and juvenile wagtails and weavers. The Bull Frog, *Rana adspersa*, will take chicks and ducklings.

Less Important Predators

Marine. Australian Sea Lion, *Neophoca cinerea*; Hooker's Sea Lion, *Phocarctos hookeri*; and Northern Fur Seal, *Callorhinus ursinus*.

Freshwater. Silurids—*Heterobranchus longifilis* and *Bagrus docmac*; Lungfish, *Protopterus aethiopicus*; true Barbels (*Barbus*); Eels (*Anguilla*); Brown Trout, *Salmo trutta*; Rainbow Trout, *Salmo irideus*; and the Bull Frog, *Rana adspersa*.

Occasional Freshwater Predators

Include, Giant Perch (*Lates*), Tiger Fish (*Hydrocyon*) and the Water Tortoise, *Pelomedusa subrufa*, but there is no evidence that African Otters prey on birds.

Invertebrate Predators: Crustaceans

Ocypode Sand Crabs and Land Hermit-Crabs (*Coenobita*) can be terribly destructive to nestling and fledgling seafowl.

Accidental Bird Destruction and Injuries

Certain diving birds, such as various species of ducks and grebes may be accidentally destroyed in considerable numbers by being caught in gill-nets set for fish; the Fish Eagle, *Cuncuma vocifer*, is sometimes drowned when it seizes a fish too large to carry off; and an instance is quoted of a Bryde's Whale, *Balaenoptera brydei* which may have accidentally swallowed 15 large seafowl.

Large Clams may be responsible for the leg injuries to migrant waders, particularly *Charadrius leschenaultii*, *Charadrius squatarola* and *Crocethia alba*, which are commonly seen along the East African coast.

References:—
Also, see :
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The Breeding of the White Pelican *Pelicanus onocrotalus* in the Rukwa Valley, Tanganyika

by Mr. Desmond Vesey-FitzGerald

A talk given to the B.O.C. in May, 1957

Although the breeding of the White Pelican in East Africa has been reported by several observers, a former account of a breeding colony, Vesey-FitzGerald (1954), appears to be the first published record of its occurrence, Benson (1956).

During 1956 the birds bred again in the Rukwa Valley, and some additional observations were made which are recorded in this note.

Perhaps the outstanding feature of all the breeding which has taken place in the Rukwa Valley is the apparent inefficiency of the process. The 1953 attempts were marred by the recession of the lake, with the result that many nests were deserted during incubation, leaving the colony exposed to predators, and resulting in practically no young birds being reared. Good rains prior to the 1956 breeding season appeared to provide optimum conditions for the nesting of various water fowl, and the white Pelicans bred again. Their lack of success can only be attributed to their own stupidity. In other words, although the ecological conditions, i.e. plenty of water and good fishing, were apparently favourable, the behaviour of the parent birds in selecting the site for the colony was so unattuned to the opportunities available, that once again the breeding was practically a failure.

The birds selected an area in the flood plain which at the time, August, had dried up and was about three miles from the shore of the lake. The area was covered with tall grass, and the actual spot appeared to be quite identical to the whole vast plain which covers some 400 square miles. The vast concourse of birds flattened the herbage over an area of 2 acres, and there laid their eggs in clutches of two on cushion-like nests made among the trampled straw. The nests were approximately 1 metre apart and so there were possibly some 10,000–15,000 eggs on the site.

At the time of laying the surrounding herbage was still fairly green, but during the incubation and fledgling period, about 2 months, the herbage dried up and so, of course, the whole colony was exposed to the risk of fire. Fortunately for the birds the area was protected from grass fires in connection with the control of the Red Locust, *Nomadacris septemfasciata*. The dense herbage however provided ample cover for predators which it must be supposed had no difficulty in locating the colony since its smell was perceptible to humans passing over it in a low-flying aircraft. Vultures, marabou storks, Goliath herons and sacred ibises were in constant attendance, but their role was probably more that of scavengers than predators, since the wastage of eggs and mortality of chicks apparently filled their needs.

The two eggs in each nest were laid at intervals, and consequently one chick hatched several days before the other. Many instances were witnessed of the older chick bullying the younger to death, indeed this habit appeared

to be quite general and it is doubted if there was a single instance of two chicks surviving in one nest. In any case the chicks left their nest within a few days of hatching and formed up into "schools." Very frequently the first chick joined the school before the second egg hatched. In such cases the unhatched egg was immediately forsaken by the parent. Abandoned eggs littered the breeding ground. Some of these were apparently addled eggs which had never been laid in a nest. In this connection it is worth noting that during the breeding period eggs were laid all over the place such as beside drying pools where the birds went fishing, along the river bank where they bathed and around the lake shore where they rested.

When the chicks had joined the school it is difficult to imagine that the parents were able to recognize and attend to their own offspring. Feeding appeared to be quite haphazard and the initiative for action to be with the chick. When an adult returning from a fishing expedition landed on the breeding ground it was besieged by chicks and it seemed to be simply a case of the strongest winning. The parent appeared to resist the onslaught until a chick thrust its head down the throat of the adult. Then the latter seemed to be reconciled to the successful chick, and the mob of fledglings rushed off to besiege another adult bird.

This system of feeding was obviously prejudicial to the weaker youngsters, and was responsible for a further high infant mortality. Another cause of mortality was the hot noon sun. The parents spent long hours shading the young, an activity which limited the hours they could spend fishing. However, since the death rate among the young soon caused the adults far to exceed the chicks in numbers, there was no difficulty in the latter finding ample opportunity for shading.

The colony under observation was far away from water and there appeared to be no provision for the young to drink. A more serious consideration was that the young had no chance of entering water to cool off during the heat of the day. At a small lakeside colony the young entered the water and swam about, and possibly practised fishing, long before they were able to fly. In the land-locked colony no such opportunity could arise before the young were strong enough to fly the distance of 3 miles to the lake. They were therefore quite dependant on the adults for imported food until an advanced age. By the time the youngsters were trying their wings, only a few parent birds remained at the colony and no feeding was observed.

Many of the weakened and inexperienced fledglings crash-landed in the long grass from which it was impossible for them to disentangle themselves to become airborne again. In this way, it seems, the last surviving youngsters perished.

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Vesey-FitzGerald, D. 1954. "Note on the Breeding of Pelicans in the Rukwa Valley, S.W. Tanganyika." *Ostrich*, Vol. XXV, No. 3, p. 139.

Plate 1. Two chicks in the nest, showing the difference in size due to staggered hatching. The older chick was found invariably to bully the younger one to death.

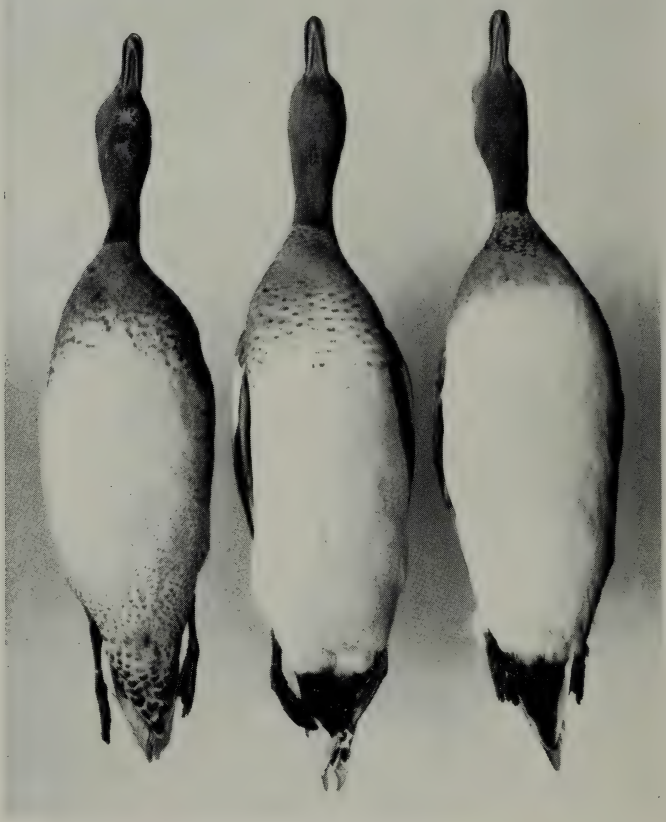
Photo 2. General view of the colony showing the trampled area occupied by the pelicans. The undisturbed grass stand can be seen above the heads of the adult birds in the background, giving an idea of its height and density. The young birds have formed up into "schools" and the abandoned eggs are lying about in the foreground

Further Remarks on Variant Wigeon

by Dr. James M. Harrison *and* Dr. Jeffery G. Harrison

Received 4th April, 1957

In the Bulletin, Vol. 76, pp. 125–6, 133, we recorded an adult drake Wigeon, *Anas penelope* Linnaeus, with a breast shield heavily spotted with black, such as we had never seen before. We suggested that this unusual spotting represented a reversionary recessive expression towards a more primitive plumage of the *Anatidae*. During the season of 1956–7 we kept a careful watch for further examples and now have to record two more of this same type and one showing a tendency towards a white neck ring.



Variant drake Wigeon

The first is an adult drake and was shot on the Medway Estuary, Kent, on 16th January, 1957, by Alan Wilkinson, Esq. (see Plate—right-hand bird) and differs from the original specimen (see Plate—centre bird) in

having the black spots concentrated on the upper half of the pinkish-buff breast. The second specimen is an immature drake in transition (see Plate—left-hand bird) and was shot by J.G.H. on the Medway Estuary, Kent, on 28th November, 1956. This is of interest in having the flank feathers and lower belly much more heavily tipped with black than is usual in drakes of this age and where the adult breast feathers have moulted through in the upper breast, these are also tipped with black, so that it is possible to see that this abnormally spotted juvenile plumage was going to be succeeded by the spotted breast variant.

The third specimen to be described represents a variant which we have not encountered previously. This bird, a first winter drake, was shot on the Isle of Sheppey, Kent, by J.M.H. on 5th December, 1956. The peculiarity this example presents is that of a whitish neck ring. This character, which as is well known, occurs not uncommonly in the drake Teal, *Anas crecca crecca* Linnaeus, is less strongly developed than in the variants of that species, but is nevertheless quite definite. The significance of this character has already been discussed previously in the BULLETIN.

Significant Pattern Variations in European *Corvidae*

by DR. JAMES M. HARRISON

Received 1st April, 1957

In recent issues, papers describing variations of pattern in the three common *Corvidae*, i.e. *C.corone*, *C.frugilegus* and *C.monedula*, have been published, and the hypothesis is that these have evolutionary (phyllogenetic) importance has been advanced.

The accompanying photograph demonstrates what would appear to be a basic corvine pattern since, as can be seen, this pattern is exactly reproduced in the two distinct species, *C.corone* and *C.monedula*. The former is a juvenile female and was shot by Dr. David Harrison near Seal, Kent, on 25th July, 1956; the latter is a first winter female which was shot by Mr. D. B. Jones at Lullingstone, near Sevenoaks, on 16th February, 1957.* The above two specimens show the variation to its maximal extent, but others show only the merest trace of barring. As can also be seen, in the Jackdaw all the flight feathers and all but the two outermost rectrices on the right, are retained juvenile dress and there is considerable obscure transverse barring of all the tail feathers. A similar type of barring is also apparent in the rectrices of the Carrion Crow.

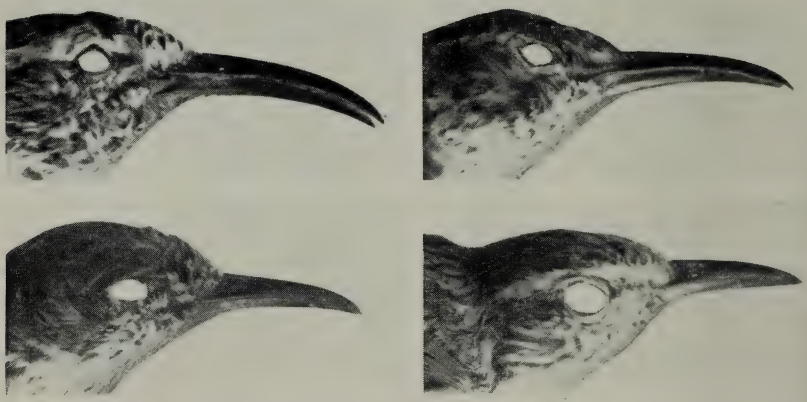
From enquiries made, such variants would appear most unusual. None have been reported to me from the more extensive Continental mainland, but the fact that it does occur is evidenced by an adult male specimen I possess of *C.corone corone* x *cornix*, which was obtained near Dresden on 21st February, 1956, and for which I am indebted to Dr. Wolfgang Makatsch. This example shows the condition symmetrically near the tips of the 7th primary in each wing.

While the "mottled" pattern in the Rook has been known for a very

*A further family of Carrion Crows on the same farm at Seal in the summer of 1957 contained two young similar to the one illustrated on page 132, a third was a minimal type and the remaining two young were normal. Two further examples with the barring well marked on the primaries, were present on a farm near Kemsing on September 15th, 1957 among a flock of over 70 Carrion Crows.

White wing-barring in Corvines
(*Top*) Jackdaw, female, first winter (*Bottom*) Carrion Crow, female, juvenile

(*see article on page 131*)



Variation in the bills of four western Cape Province races of the Long-billed Lark *Certhilauda curvirostris* (Hermann).

Upper: *C.c.falcirostris*. *C.c.curvirostris*.
Lower: *C.c.brevirostris*. *C.c.bradshawi*.

The extremes of variation shown by the contiguous races *C.c.falcirostris* and *C.c.bradshawi* should be studied in conjunction with the accompanying text.

(*see article on page 133*)

long time and has recently been recorded by Mr. Bryan Sage in both the Carrion Crow and the Jackdaw, white wing-barring of the type now shown, is of more recent origin it would seem. In Kent, the first year that it was observed personally was in 1951.

How are such cases of the more or less sudden appearance of a striking discontinuity of individual variation to be explained? It is of course well known that there are some physical influences which can effect such changes, but these are not believed to be operative in the individuals under consideration. If no extraneous influence is responsible, then we must postulate an intrinsic process resulting from some set of circumstances, which has acted as the determining factor.

It is a well-known fact that since the decline of game preservation with its very effective keepering, the common corvine species have increased beyond all bounds. Carrion Crows, Rooks, Jackdaws, Jays and Magpies are largely sedentary in the British Isles. The proper control of their numbers ended with the diminution of keepering and as a result, their numbers have risen astronomically. This great increase in density has, as a direct result, led to in-breeding of the stock. This segregation of sedentary species within a limited area is bound to give rise to variants by favouring gene recombinations and other genetic mechanisms, disclosing recessives and revealing through an altered ontogeny their ancestral phyllogeny.

These instances are of much significance scientifically, the illuminating results of manipulating the balance of nature. That many desirable small passerine species are the price paid for the experiment must be faced. The gamekeeper of old, although the enemy of the small and medium-sized hawks and owls, was nevertheless indirectly the preserver and protector of many of the smaller birds.

Instances of avian morphology supporting the hypothesis of ontogeny repeating phyllogeny are more frequent than is generally supposed, and the more segregated a population and the steeper the rise in the global numbers of such a population, the higher will be the incidence of variants. These may confidently be expected to advance our knowledge of the evolutionary phyllogeny of the species, and even of the species groups concerned.

On the Range and Status of *Certhilauda falcirostris* Reichenow, 1916: Port Nolloth, N.W. Cape

by MR. P. A. CLANCEY

Received 20th April, 1957.

Sclater, *Ibis*, 1911, p. 259, records that Mr. (now Captain) C. H. B. Grant obtained a series of 14 specimens of the Long-billed Lark *Certhilauda curvirostris* (Hermann) at Port Nolloth in the north-western Cape Province, South Africa, in March, July and August, 1903, during the course of the Rudd zoological explorations. Subsequent to Sclater's study of the material, the Port Nolloth series of Long-billed Larks was broken up and specimens were disposed of to different museums, five only being retained in the collection of the British Museum (Nat. Hist.), London. One specimen is now in the collection of the South African Museum, Cape Town, and another (mounted) is in the Durban Museum, while one which was presented to the Zoological Museum, Berlin, became, in 1916, the *Type* of a new species—*Certhilauda falcirostris* Reichenow

(*vide Journal für Ornithologie*, 1916, p. 161). Sclater, *Systema Avium Æthiopicarum*, part ii, 1930, p. 318, and Meinertzhagen, *Proceedings of the Zoological Society of London*, vol. 121, 1951, p. 105, who erroneously call the form *C.falciformis* (*sic*!) believe it to be a name given to an abnormality, while Roberts, *Birds of South Africa*, 1940, p. 198, simply places it in the synonymy of *C.c.curvirostris* without comment. In an instructive note on the Long-billed Larks collected during the course of the 1949–1950 British Museum (Nat. Hist.) Expedition to South-West Africa, Mr. J. D. Macdonald (*Ibis*, vol. 94, 1, 1952, pp. 122–127) discusses the question of the validity of Reichenow's *C.falcirostris* on the basis of the three remaining Grant specimens in the British Museum, and suggests that the form should be recognized as a race of *C.curvirostris*. Even more recently the S.A.O.S. List Committee, *Ostrich*, vol. xxvii, 4, 1956, p. 178, has added the race to the official South African list as a result of a study of a series of specimens taken at Port Nolloth by Roberts and his associates in August, 1937, during the course of the Barlow-Transvaal Museum Expedition, and which is now in the collection of the Transvaal Museum, Pretoria. On the 1st and 2nd of November, 1956, members of the staffs of the Durban and East London Museums visited Port Nolloth with the purpose of studying and obtaining further material of this still poorly-known form, and a series of 16 specimens was obtained. Information on the ecology and range of *C.c.falcirostris* was also gathered, and as such data are not available in the literature they are given below along with additional taxonomic notes on the form.

C.curvirostris is a large-sized lark, markedly sexually dimorphic in proportions, which is confined to south-western and southern Africa, ranging in about twelve races from Benguela in Angola southwards through South-West Africa to the Cape and eastwards through southern Bechuanaland to the Transvaal, western Swaziland and Natal. The great wealth of variation in the species as a whole has occasioned considerable confusion in the taxonomy of the various forms, and as recently as 1940 Roberts, *loc. cit.*, recognized four species of Long-billed Larks, each with its own races. Meinertzhagen, *loc. cit.*, believed much of the variation in the species to be polymorphic, averring on unstated evidence that birds with red and grey plumage-phases occur together in the same population. As Macdonald has correctly observed, greyish birds are confined to the littoral of the western, south-western and southern Cape Province, the red-coloured birds to the interior plateau of the sub-continent. It has now been ascertained that variation within individual populations is conservative, and Meinertzhagen was mistaken in believing that grey and red birds occur in the same population on the same ground. It should be noted that variation in the species not only involves the colouration of the upper-parts, but that of the under surfaces, the degree of striation, the length of the bill, wings and tail, the length and shape of the hind-claw, etc. This variation is clearly geographically connected, and I believe it correct to admit one polytypic species (*C.curvirostris*) with approximately twelve valid races. While material now available in South African museums is sufficient to demonstrate the gamut of the species' geographical variation and establish the existence of clines in certain characters, it is not yet extensive enough to permit of accurate ranges being defined for many of the subspecies.

C.c.falcirostris is one of a coterie of three dorsally greyish or drab-coloured races confined to the coastal regions of the western, south-western and southern Cape Province, the others being *C.c.curvirostris* and *C.c.brevirostris* Roberts. Two adult females of *C.c.falcirostris* collected at the mouth of the Olifants River on 29th November, 1956, by Dr. J. M. Winterbottom, and now in the collection of the South African Museum, and the existence of specimens of the nominate race from Lamberts Bay, some thirty miles to the southward, confirm that the mouth of the Olifants can be taken as the southern limit of range of *C.c.falcirostris*. Its limits in the north are still not known. It is relatively abundant at Port Nolloth and between that town and Alexander Bay, near the mouth of the Orange River, and Plowes, *Ostrich*, vol. xiv, 3, 1943, p. 133, records finding the Long-billed Lark (? race) on the coast four miles north of the Orange River mouth. Grant, *Ibis*, 1911, p. 259, noted that it was confined to the "sandveld," and the information now gathered confirms that *C.c. falcirostris* is an ecological race of the white coastal sand dunes, where it is found in pairs or small family parties feeding or sheltering from the sun among the stunted scrub which grows on the dunes. Members of the staffs of the Durban and East London Museums found it wild but possessed of similar habits to the better-known interior races, and stomach-contents consisted of seeds and the remains of insects. At the beginning of November adult birds were in worn dress and in heavy moult, and many birds of the year were moulting from juvenal to first-year plumage, while some pairs were still tending newly-fledged young. When Grant visited Port Nolloth in August, 1903, he did not find the species breeding, so that with the data now available the breeding season of *C.c.falcirostris* can be fixed as September–November.

Hoesch and Niethammer, *Die Vogelwelt Deutsch-Sudwestafrikas*, 1940, demonstrate the interesting correlation between soil colour and texture and the dorsal colouration of several plastic species of larks in South-West Africa, and comparable instances have been reported by other workers, particularly among the larks of the genera *Galerida* and *Ammomanes* occurring in the Palaearctic. In *C.c.falcirostris* I believe we have a further example of this relationship, the form's very whitish and heavily striped plumage simulating the glaring whiteness of the sand and the shadows of the stunted scrub among which it lives. An extremely long bill and long, straight hind-claws are further adaptations to a life on sand dunes, where most insects have to be probed for, and progression is made difficult by the loose and shifting nature of the sand. *C.c.falcirostris* is not unique, because additional pallid forms of birds have recently been described from the biota of the almost rainless north-western Cape Province, these being the scrub-robin *Erythropygia coryphaea cinerea* Macdonald and the lark *Certhilauda albescens patae* Macdonald.

Immediately inland from the coastal sand dune belt of the north-western Cape, on red soil and among rocks and stunted scrub, occurs a form of Long-billed Lark which differs strikingly from *C.c.falcirostris*. Macdonald, *loc. cit.*, records finding this form—*C.c.bradshawi* (Sharpe), 1904: Upington—almost at the mouth of the Orange River, at Grootderm and Assenkjer, and it also approaches the coast on the Springbok–Port Nolloth road. *C.c.bradshawi* differs from *C.c.falcirostris* in its much redder and less striated upper-parts, greyer hind-neck and less densely

speckled under-parts, the spots being restricted to the upper breast. It is also possessed of a much shorter and straighter bill and shorter and more curved hind-claws (see Table of Measurements). It is the finding of two such dissimilar races virtually side by side which has resulted in the treatment by some modern workers of widely divergent forms of Long-billed Larks as either distinct species or colour variants of a small number of putatively unstable, wide-ranging subspecies of a single polytypic species.

While *C.c.falcirostris* is abruptly different to the geographically contiguous race, *C.c.bradshawi*, its discreteness from the nominate subspecies is less salient. Compared with *C.c.curvirostris* it differs in its paler and less umber-coloured fringes to the feathers of the upper-parts. Using the *Colour Atlas* of C. and J. Villalobos, Buenos Aires, 1947, the buffy drab fringes of the mantle feathers of *C.c.falcirostris* give a reading of *c.* 0–11–3 deg. as against 0–8–2 deg. in *C.c.curvirostris*. It is also whiter ventrally, and the breast striae of newly moulted birds are purer, less brownish, black. However, it is in the greater length of the bill that the best subspecific character appears to lie, this structure measuring 36.5–38.5 (37.6) in 6 adult ♂♂ of *C.c.falcirostris*, and 27.5–33 (30.3) in 8 ♀♀, as against 30-33 (31.0) mm. in 4 ♂♂ of *C.c.curvirostris*. Unfortunately only one female of this latter race has been available for study, the bill measuring 24 mm. Two sub-adult ♂♂ of *C.c.falcirostris* have shorter bills than adults, measuring 33 and 34 mm. Distinctions of use in segregating the juvenal plumages of *C.c.curvirostris* and *C.c.falcirostris* are also well marked, the latter race being paler above, with broader and whiter apical fringes to the feathers, and the ground colour of the under-parts is a purer white.

The range of the nominate race of the Long-billed Lark can now be defined as from the winter rainfall areas to the south of the mouth of the Olifants southwards to the Cape Peninsula and Cape Agulhas. From Bredasdorp and Swellendam eastwards to about George and Knysna in the southern Cape Province occur rather different populations, which have been given the name *C.c.brevirostris* Roberts, 1941: Zoetendals Vallei, Bredasdorp district. Of this poorly-known race I have examined six specimens, and while it does appear to have a shorter bill than the nominate race (28 mm. in 5 ♂♂), there are other characters which were not utilized by its describer in the original description in the *Ostrich*, vol. xi, 2, 1941, p. 129, these being the more buffy yellow upper-parts (about 0–7–4 deg.) and rather drab-white ground to the ventral surfaces. It also appears to have a rather short tail (c.71 mm. in ♂♂). The saturated and heavily striped *C.c.gilli* Roberts, 1936: Nieuveldt Mountains, near Beaufort West, in which the mantle is a deep vinous chestnut streaked with sepia, is confined to the interior plateau, ranging from about Touws River eastwards.

I am grateful to Miss M. Courtenay-Latimer, Director of the East London Museum, for the loan of material and for field notes on *C.c. falcirostris*, and to Dr. J. M. Winterbottom, Ornithologist, South African Museum, Cape Town, for assistance and the loan of western and south-western Cape specimens. Mr. M. O. E. Baddeley, taxidermist of the Durban Museum, also deserves honourable mention for his work in collecting and preparing vital specimens at Port Nolloth.

(*see page 132 for plate*)

Table of measurements (in mm.) of adult males of eight Cape Province races of the Long-billed Lark *Certhilauda curvirostris*

Race	No.	Wing (*flattened*)	Culmen (*from skull*)	Tarsus	Tail	Hind-claw
C.c.falcirostris ...	8	107–116 (111.7)	(6) 36.5–38.5 (37.6)	30.5–33 (32.2)	78–83 (80.4)	13–17 (14.5)
C.c.curvirostris ...	2	106, 107	(4) 30–33 (31.0)	30.5, 31.5	71 (w.), 78	12, 17.5
C.c.brevirostris ...	5	(3) 102.5–105 (103.8)	28 (28.0)	(3) 29.5–30 (29.7)	70–74 (71.0)	(3) 12–15.5 (14.3)
C.c.gilli	13	106–115 (112.0)	27.5–30.5 (28.9)	30–33 (31.5)	(12) 83–90 (84.4)	9–13 (10.4)
C.c.subcoronata ...	13	109–115 (111.1)	27–32 (28.6)	29.5–33 (31.1)	(12) 80.5–86.5 (83.3)	9–12.5 (10.6)
C.c.bradshawi ...	8	104–112.5 (109.0)	27–29.5 (28.0)	29–31 (30.0)	76–84 (81.7)	7–12 (9.8)
C.c.semitorquata ...	3	106–109.5 (107.8)	26–27 (26.3)	27.5–30 (28.8)	77.5–80.5 (78.5)	11.5–13 (12.7)
C.c.daviesi	2	105, 105.5	25.5, 25.5	28, 29.5	(1) 78.5	12+, 13

The clinal variation in bill-length and non-clinal variation in the length of the hind-claw and tail should be noted. In the extreme western Cape, *C.c.falcirostris*, the bill-length reaches its maximum, in *C.c.daviesi* Gunning and Roberts of the eastern highlands its absolute minimum. The three coastal races of western, south-western and southern districts (*C.c.falcirostris*, *C.c.curvirostris*, *C.c.brevirostris*), living on sand and sandy soils, have longer and straighter hind claws than the other races here considered. The short tail of *C.c.brevirostris* appears to be a localized development, which is not connected with the gradual diminution in size which ranges in a west—east direction in the Cape Province.

On the Egg of the African Cuckoo, *Cuculus canorus gularis* Stephens

by Captain C. R. S. Pitman

Received 3rd June 1957

Herbert Friedmann in (1) *The Parasitic Cuckoos of Africa*, 1948, pp. 54–62; and in (2) *Further Data on African Parasitic Cuckoos*, 1956, p. 383, has brought together the results of the studies of many authorities on African ornithology, as well as the observations of numerous field naturalists. But in the case of *Cuculus canorus gularis* until recently its egg was unknown, while the Fork-tailed Drongo, *Dicrurus adsimilis adsimilis* Bechstein is the only host authenticated (1) by the presence of a young cuckoo of this species in the nest. In (2), again based on a juvenile cuckoo in the nest, Layard's Bulbul, *Pycnonotus tricolor layardi* Gurney is quoted as a host.

In (3) *The Ostrich* 1948, p. 158, Mr. B. V. Neuby Varty describes an oviduct egg (no more to be laid) of *C.c.gularis* as "a very pale washed-out greeny-blue colour, with pale mauve and brown spots. It measured 24 x 18 mm." He found "a very similar egg in the nest of a Glossy Starling."

According to (2) Neuby Varty found an egg of this Cuckoo, described as "very light bluish grey with blotches of slate and dark greenish olive brown, mostly at the thick end but also scattered over the rest of the egg, and measured 23.5 x 16 mm." in a nest of the Grey-headed Sparrow, *Passer griseus diffusus* (Smith), though the authenticity of the identity of this Cuckoo egg is not established. It may have been the egg of the Didric Cuckoo, *Chrysococcyx caprius* (Boddaert), and more likely so the nest being in a hole in a tree; though Neuby Varty—by comparison with Didric eggs from the same locality—is satisfied that it is in fact the egg of *gularis*.

Neuby Varty has sent me an oviduct egg, measuring 24.8 x 17.0 mm., which was laid by an African Cuckoo after being shot (on 4th November, 1956). This egg is somewhat ovate, though oblate at the larger end; it is cream-coloured, slightly tinged pinkish and marked with irregular bold blotches and spots of rufous, mainly around larger end on underlying irregular blotches of pale mauve, pale lilac-grey (mainly around large end) and very pale purplish slate distributed sparingly all over the egg; texture, smooth and slightly glossed.

In connection with this egg, Neuby Varty's description of the tactics of the African Cuckoo to draw away its prospective hosts from their nest is reminiscent of those resorted to by Honey-Guides—vide (4) *Bull.B.O.C.* 76 (7):1956, p. 114. He observed a pair of *Dicrurus adsimilis* about 4.30 one afternoon, chasing a ♂ African Cuckoo which kept on calling. As this trio disappeared into the bush, a second, and silent, Cuckoo arrived and looked at him; he was sitting under a small tree. This happened several times, but on each occasion the Drongos returned and chased off the silent one. Then the Drongos would come back, and so would the ♂ Cuckoo, still calling, only to be chased away by the Drongos; meanwhile the ♀ Cuckoo quietly returned. At the fourth attempt by the ♀ Cuckoo, she settled within 10 feet of the watcher, who shot it at the base of the neck with a .22 rifle. It fluttered to the ground and as it expired laid an egg.

The Drongos' nest was 10 feet up in the tree beneath which Neuby Varty was sitting, and contained three eggs very similar in coloration to the one laid by the Cuckoo.

Somewhat similar Cuckoo eggs, by inference those of *C.c.gularis*, have been found by Neuby Varty in Drongo nests on (a) 4th November, 1950; (b) 8th October, 1951; and (c) 25th October, 1952. The (a) *gularis* egg is described as "very light pink ground colour with spots of mauve and russet, slightly more concentrated at thick end; egg rather elongated, small and rather rounded. Size 26.0 x 16.5 mm." The egg of the Drongo host "ground pink with spots of russet concentrated at the thick end to form a large blob, in fact most of thick end entirely covered." (b) This Drongo nest at first (on 8th October) contained three typical, pinkish (with markings) eggs. When examined on 10th October it still contained three eggs, but one—presumably a Cuckoo's—was lighter in colour and more pointed than the other two. On 11th October the nest contained one Drongo egg and the Cuckoo egg, and on 12th October only the Cuckoo egg. This egg was left but a week later the brooding bird was found snared and dead in a fibre noose. The egg was then taken; it is "very light pink with very faint smudges of light mauve and very pale markings of reddish brown," and measures 25 x 17.5 mm. (See (5) *The Ostrich* 1952, p. 63). (c) "Two Drongo eggs, 24.5 x 18 mm. and 24.5 x 18.5 mm., with more sharply defined spots" than (a) and "similar blob on top. *Gularis* egg a little lighter than (a), but same shape; size 24.5 x 16.75 mm." All Neuby Varty's observations were made in the district of South Marandellas, in which part of Southern Rhodesia *Cuculus canorus gularis* is common during the October-November breeding season. Oviduct eggs—one fragmentary, the other whole—obtained in Northern Rhodesia in October, 1949, were according to a correspondent not of this pink type, but their descriptions are not available. M-Praed and Grant in (6) *Birds of Eastern and North-Eastern Africa* 1952, p. 496, are no doubt correct in suggesting "colour probably variable." There is much yet to be learnt about the eggs of the African Cuckoo.

A Note on a "Mottled" Jackdaw

by Sir Philip Manson-Bahr

Received 5th April, 1957

It is quite a coincidence that I should read Mr. Bryan Sage's note in the Bulletin (Vol. 77, pp. 55–56) just as I was engaged in penning a somewhat similar observation.

On 23rd March, 1957, when about half-way between Birling Gap and Beachy Head, I was watching a congregation of Jackdaws. They were mostly grouped in pairs, but standing apart was what appeared to be a smaller and solitary bird. It was brindled all over with white speckles and showed no signs of a collar and, when the flock took flight over the cliffs, this odd bird was on the outside and was not flying so strongly. It was obviously *persona non grata* to the rest of the community. I would describe it as sepia coloured with spots and streaks of white.

I remember an example of this variety in the Tring Museum many years ago.

Three Unusual Examples of a Partial Albinism in the Pochard *Aythya ferina* (Linnaeus)

by Mr. Bryan L. Sage

Received 13th March, 1957

The Pochard appears to be a remarkably stable species so far as plumage colouration is concerned, and I have only three records of any variation from the normal type. Two of these records are very recent. The remaining record is provided by an adult female with partial albescence of the head and throat which is in Dr. James M. Harrison's collection. Dr. Harrison informs me that this bird was obtained on the Earith Washes, Cambridgeshire, by Mr. J. G. Tatham, on 7th February, 1942 (Fig. 3). It is perhaps of interest to note that all three records refer to females.

On 4th November, 1956, Mr. Graham Horsley and a number of other observers saw a female Pochard on Barn Elms Reservoir which had a "double white nuchal spot," no further details were obtained. On 9th December, 1956, at Tring Reservoirs, Hertfordshire, Mr. Horsley and the

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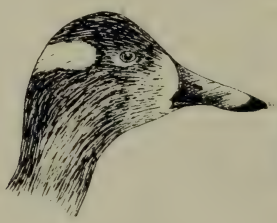

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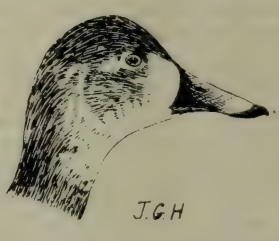

3.

writer saw what was apparently the same bird in a flock of Pochard. It was seen to have pear-shaped spot just behind each eye, the points of the "pear" almost meeting at the back of the head (Fig. 1). On 24th January, 1957, Mrs. S. Cowdy saw the same bird on Weston Turville Reservoir, Buckinghamshire. She noted that this unusual head pattern was not noticeable from immediately in front of the bird.

Some days later, on 27th January, 1957, Mrs. Cowdy saw another aberrant female Pochard at Tring Reservoirs. This individual was seen to have a broad oblong-shaped patch of white with slightly pointed ends extending right round the back of the head, but not reaching so close to the eyes as the spots of the first bird (Fig. 2). Both these birds were normal in all other respects.

The occurrence of two aberrant birds at these reservoirs within such a short space of time is quite remarkable.

Figures 1 and 2 are from sketches made in the field and Figure 3 is from the actual specimen.

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BACK NUMBERS OF THE "BULLETIN"

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Members who have back numbers of the "Bulletin" which they no longer require, are requested to kindly send them to R. A. H. Coombes, Esq., as above.

DINNERS AND MEETINGS FOR 1957

19th November, 17th December.

SEPARATES

Contributors who desire free copies of the Bulletin containing their notes should state so on their MS., otherwise these will not be ordered These will be supplied up to a maximum of fifty.

PUBLICATION OF THE "BULLETIN"

Members who make a contribution at a Meeting should hand the MS. to the Editor at that Meeting. As the proofs will be corrected by the Editor, it is essential that the MS. should be correct and either typed or written very clearly with scientific and place names in block letters. The first mention of a scientific name should be spelt out in full, i.e., genus, specific name, racial name (if any), and author. Any further mention of the same name need only have the initial letter of the genus and no further mention of the author.

If no MS. is handed to the Editor at the Meeting, a note will be inserted mentioning the contribution.

BLACK AND WHITE ILLUSTRATIONS

The Committee have decided that in future the Club will pay for a reasonable number of black and white blocks at the discretion of the Editor. If the contributor wishes to have the blocks to keep for his own use afterwards, the Club will not charge for them, as has been done in the past.

Communications are not restricted to members of the British Ornithologists' Club, and contributions up to 1,500 words on taxonomy and related subjects will be considered from all who care to send them to The Editor, Dr. J. G. Harrison, "Merriewood", St. Botolph's Road, Sevenoaks, Kent.

Communications relating to other matters should be addressed to the Hon. Secretary, N. J. P. Wadley, Esq., 14 Elm Place, London, S.W.7.

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NATURAL HISTORY
- 3 DEC 1957
PRESENTED

Edited by
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PRESENTED
BRITISH MUSEUM (NATURAL HISTORY)

The five hundred and sixtieth meeting of the Club was held at the Rembrandt Hotel, S.W.7, on Tuesday, 19th November, 1957, following a dinner at 6.30 p.m.

Chairman: Mr. C. W. Mackworth-Praed.

Members present, 41; Guests 9; Guest of the Club, Senor J. A. Valverde; Total: 51.

Migration in the Western Sahara

Senor Valverde read a paper on this subject, illustrated by slides. A full account will appear in a subsequent Bulletin.

A Preliminary Note on the Taxonomic Significance of the Anting-behaviour of Passerine Birds

by Mr. K. E. L. Simmons

Received 18th April, 1957

Anting-behaviour has been reviewed recently, with bibliography, by the writer (Simmons, 1957b). Many aspects of this remarkable phenomenon were discussed but not taxonomic problems, which are the subject of the present note. There are two main forms of anting: "active" (in which the birds rub crushed ants along certain areas of wing and tail with the bill) and "passive" (in which it allows live ants to crawl on to its plumage). True anting seems to be confined entirely to the order *Passeriformes*; the families and genera in which this behaviour has been recorded are listed below. The manner of performing is quite stereotyped in each species and shows relatively little variation other than that of intensity. The behaviour is instinctive, being governed by both central-nervous processes and external factors, and apparently functions to spread formic-acid and, sometimes, other organic liquids over the feathers, probably to improve their general condition. The majority of Passerines perform only the active type of anting though a few larger species do the passive type as well.

LIST OF FAMILIES AND GENERA IN WHICH ANTING-BEHAVIOUR HAS BEEN RECORDED

Dendrocolaptidae (wood-hewers): *Dendrocolaptes.*
Tyrannidae (New-world flycatchers): *Pipromorpha.*
Corvidae (crows): *Corvus** (5), *Cyanocitta, Garrulus** (2), *Cissalopha, Urocissa, Cissa, Cyanopica, Pica, Struthidea, Dendrocitta.*
Ptilinorhynchidae (bower-birds): *Ptilinoryncha, Aeluraedus.*
Sturnidae (starlings): *Acridotheres* (4), *Sturnus, Pastor, Spreo, Lamprocolius, Lamprotornis, Sturnopastor, Gracula.*

Irenidae (fruit-suckers): *Chloropsis* (2).
Icteridae (troupials): *Dolichonyx*, *Icterus* (3), *Molothrus*, *Agelaius*, *Quiscalus* (3).
Ploceidae (weavers): *Aegintha*, *Passer*, *Euplectes* (3), *Bubalornis*, *Diatropura* (2), *Coliuspasser* (2), *Melanopteryx*.
Fringillidae (''finches''): *Fringilla* (2), *Coccothraustes*, *Hesperiphona*, *Junco*, *Melospiza*, *Passerella*, *Passerina* (3), *Pheuticus* (2), *Paroaria*, *Pipilo*, *Richmondena*, *Saltator*, *Sporophila*, *Zonothrichia* (3).
Tanagridae (tanagers): *Piranga* (2), *Calospiza*, *Tanagra* (2).
Parulidae (New-world warblers): *Vermivora*.
Coerebidae (sugar-birds): *Dacnis*.
Zosteropidae (white-eyes): *Zosterops*.
Meliphagidae (honey-eaters): *Meliphaga*.
Prionopidae (helmet-shrikes): *Coluricincla*, *Grallina*.
Pachycephalidae (thick-heads): *Pachycephalus*.
Motacillidae (pipits and wagtails): *Anthus*.
Bombycillidae (waxwings): *Bombycilla*.
Muscicapidae (Old-world flycatchers): *Niltava* (2).
Turdidae (thrushes): *Turdus** (6), *Hylocichla*, *Catharus* (2), *Kittacincla*, *Copsychus*.
Cinclidae (dippers): *Cinclus*.
Minidae (mockingbirds): *Dumetella*.
Paradoxornithidae (parrot-bills): *Suthora*.
Timaliidae (babblers): *Garrulax*, *Dryonastes* (3), *Pomatorhinus* (2), *Leiothrix*, *Mesia*, *Siva*, *Lioptila*, *Yuhina*,[1] *Trochalopterum* (2).

[1] There is some evidence that *Yuhina* is not a true member of the **Timaliidae** (*see* Simmons 1957a).

This list is based on Poulsen (1956).* So far, over 100 species of twenty-four families are known to ''ant.'' For each genus, the number of species recorded as anting is given in brackets after the generic name, if more than one species is involved. At least some members of genera indicated by an asterisk have been reported as performing passive-anting.

PRELIMINARY DISCUSSION

A true classification of birds must take into account evidence provided by behaviour and general biology, as well as that of external morphology. A realistic synthesis must be based on as many characters as possible but care needs to be exercised when assessing the value of any single character, especially in such a complicated and inter-related order as the Passeriformes. Dilger (1956) has pointed out: ''It is notoriously difficult to unearth dependable characters upon which to base passerine relationships.'' The present remarks on the possible usefulness of anting as an ancillary taxonomic character are, therefore, presented very tentatively.

In some cases, similarity of particular movements indicates close relationship. A good example is the head-scratching of the *Timaliidae*, which alone of all Passerine families uses the direct method (Simmons, 1957a). The actual form of anting-movements themselves, however, is of little if any taxonomic consequence. Because of their adaptiveness, anting-movements may vary in closely allied species and be similar, by convergence, in unrelated ones—this restricts their taxonomic value. Goodwin (1952) has described and discussed the case of the two jays *Garrulus glandarius* (L.) and *G.lanceolatus* Vigors. These two species are very closely related indeed, with almost identical calls and general behaviour; yet their anting-methods are as different as any two unrelated species for, while *G.glandarius* does its anting in a very special posture to allow ants to

*With additional records from Osmaston (1909) and Sick (1957).

crawl over it, *G.lanceolatus* "ants" in the typical active manner, though with a marked caution. Goodwin suggests that perhaps the latter species uses ants "capable of doing harm to the bird should it allow itself to come into contact with the main swarm." The thrushes of the genus *Turdus* and crows of the genus *Corvus* both "ant" passively but this merely indicates that both are sufficiently large enough to do this without harm from the insects.

However, anting-behaviour need not be entirely dismissed as a taxonomic character for it does seem to be shown by some groups and not by others. There are still no records at all for some families and lower units. If this does not prove to be due either to the lack of adequate observation (as may be the case in the *Sylviidae*) or to the fact that anting is performed infrequently (as apparently in the *Bombycillidae*), then we do have a situation of potential taxonomic use. More records, both positive and negative, are urgently needed before this can be adequately tested. Meanwhile, assuming that anting is a sound character, a few cases may be discussed tentatively, mainly on generic and higher levels.

Turdidae

Ripley (1952) and Beecher (1953) have divided the *Turdidae* into two sub-families, named by Dilger (1956) the *Turdini* (true thrushes) and *Saxicolini* (chat thrushes). Anting is shown chiefly by the genera *Turdus*, *Hylocichla* and *Catharus* (*Turdini*) while typical *Saxicolini* almost certainly do not perform. For example, Poulsen (1956) gave the Robin, *Erithacus rubecula* (L.), the Redstart, *Phoenicurus phoenicurus* (L.), the Nightingale, *Luscinia megarhyncha* Brehm, the Pied Bush-chat, *Saxicola capatra* (L.), and the Indian Robin, *Saxicoloides fulicata* (L.) the opportunity to "ant" and none did so. The only other thrushes known to do anting are the Shama, *Kittacincla malabarica* (Scop.), and the Magpie Robin, *Copychus saularis* (L.), which suggests that they belong to the *Turdini*, or are intermediate or of a distinct third group. Further, the Dipper, *Cinclus cinclus* (L.), "ants" and this is consistent, with other characters, with placing the genus in the *Turdini*, rather than giving it family rank or linking it with the *Troglodytidae*, no member of which is known to "ant." An even more obscure case at present concerns the Old World *Muscicapidae*. Two species of *Niltava* (placed very close to *Muscicapa* by Vaurie, 1953), *N.sundara* Hodgson and *N.tickelliae* Blyth, show anting-behaviour. Possibly this indicates that the flycatchers are nearer the *Turdini* than the *Sylviidae* for which there are no anting records.

Fringillidae, *Ploceidae*, *Estrildidae*

The family *Fringillidae* is a most interesting one taxonomically and its composition and inter-relations are very complicated and much disputed. The latest revision is by Tordoff (1954), based chiefly on osteological features. For present purposes, the first important observation is that anting occurs in the genus *Fringilla* which is placed near the *Emberizinae* by Tordoff but nearer the typical cardueline finches (genera *Carduelis*, *Chloris*, etc.) by many other authors (see, especially, Mayr, Andrew and Hinde, 1956 for sound ethological and other reasons). However, no cardueline has been recorded as anting and Poulsen (1956) obtained negative results in anting experiments with Linnets, *Carduelis cannabina* (L.), Greenfinches, *Chloris chloris* (L.) and Canaries *Serinus canarius* (L.). On

the other hand, several emberizines are known to "ant" which does support Tordoff's findings. Then again, the related *Coccothraustes* and *Hesperiphona* perform anting, which does not support their placing with the carduelines by Tordoff. Hinde (1956) has given other behavioural evidence that *Coccothraustes* is not very close to this group. Does the anting evidence indicate some degree of close relationship between *Fringilla* and *Coccothraustes*?

Within the *Ploceidae*, as usually defined, the *Estrildinae* (waxbills, mannakins and grass-finches) forms a very well-defined assemblage which should, perhaps, best be given family status of its own. Anting occurs in the *Ploceidae* proper of which it seems of taxonomic value as no member of the *Estrildidae*, many of which are kept in captivity, has been noted as performing. Tordoff (1954) places the cardueline-finches with the estrildine ones, and the anting evidence does not oppose this though, otherwise, there is little other behaviour evidence in support (see Hinde, 1956) except that song is generally non-territorial in both groups.

At the present state of knowledge, the problem must be left there—in the air, unfortunately—but future assessments of passerine relationships must take anting-behaviour into consideration if only to reject it entirely as a character of taxonomic importance.

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Tuberculosis in Gulls: A Preliminary Investigation

by MR. R. H. POULDING

Received 28th April, 1957

INTRODUCTION

Tuberculosis has been reported from a number of wild birds, chiefly based on isolated examples from a wide range of species. Records of the disease in free living birds, presumably infected in their natural state, are given by Feldman (1938), Griffith (1939), Hignett and McKenzie (1940)

and Christiansen (1949). Few large scale investigations to determine the incidence of the disease in specific groups or species have been undertaken, despite tuberculosis being an obvious mortality factor amongst those species which habitually associate with poultry and other domestic animals in which the disease occurs. Mitchell and Duthie (1929) examined 40 Eastern Crows (*Corvus branchyrynchos*) from an area in Ontario, Canada, in which crows were dying, and found six (15%) with well-defined tuberculous lesions. In a later series of 600, 8% were found infected. Hignett and McKenzie (1940) discovered 21 cases of tuberculosis in two shot samples of Starlings (*Sturnus vulgaris*) totalling 744 individuals. Reporting on 3,000 wild bird autopsies from the Western Lake areas, U.S.A., chiefly *Anatidae*, Quortrup and Shillinger (1941) found 0.3% infected with tuberculosis (eight ducks, one swan). At Compton, Berkshire, McDiarmid (1948) found an acid-fast bacillus infection in two (3.85%) Wood Pigeons (*Columba palumbus*) from a shot sample of 52. In Denmark, Plum (1942) examined 999 sparrows (*Passer domesticus* and *P.montanus*) and isolated tubercle bacilli from ninety-three (9.3%). From another series of 937 wild birds of 68 species obtained from various parts of Denmark, the same author cultured tubercle bacilli from the organs of 19 of these.

The incidence of tuberculosis in gulls is stated to be high by both Harrison (1945) and Gray (1946) although they give no supporting evidence. The former describes a case of tuberculosis in a Black-headed Gull (*Larus ridibundus*) with involvement of the gall-bladder. Single records of the disease in a Great Black-backed Gull (*L.marinus*) and a Common Gull (*L.canus*) is given by Christiansen (1949) whilst Jennings (1955) lists a further case in a Black-headed Gull. From a series of 816 gulls (*L.argentatus*, *canus* and *ridibundus*) shot near Copenhagen, Denmark, Plum (1942) found 48 with macroscopic white spots on the liver and spleen, but only four of these yielded a growth of *Mycobacterium tuberculosis avium*. Cultures were also prepared from the livers and spleens of the total 816 gulls whether visible lesions were present or not, and thirty-two (4%) yielded a growth of tubercle bacilli. It is unfortunate that the total of each species examined, with the number infected, is not stated; neither is it clear whether the white spots in the livers and spleens were considered tuberculous on histological grounds.

MATERIALS AND METHODS OF INVESTIGATION

The 97 gulls examined in this series included one Great Black-backed Gull, 6 Lesser Black-backed Gulls (*L.fuscus*), 38 Herring Gulls, 30 Black-headed Gulls, 5 Common Gulls and 17 Kittiwakes (*Rissa tridactyla*). Eighty were received from the counties of Somerset or Gloucester, three from Lundy, Devon, five from Lincoln, one from Norfolk and eight from Scotland. The majority were obtained dead or at the point of death, but two Herring Gulls and five Black-headed Gulls were collected by shooting in order to obtain fresh material from sick gulls.

The majority of dissections were performed in the laboratory and only in exceptional circumstances were specimens examined in the field. Organs showing pathological lesions were fixed in buffered neutral formalin and sections prepared from paraffin embedded material. These were stained routinely by haematoxylin and eosin and, where indicated by the Ziehl-Neelsen method for acid-fast bacilli, Gram's stain for bacteria

and by Van Gieson's method for fibrous tissue. Fat soluble dyes were employed on frozen sections to demonstrate the lipid distribution. Cultures were prepared by direct inoculation on to glycerinated Dorset's egg medium and in certain cases nutrient agar or Sabouraud's medium was used for the growth of fungi to detect the presence of a mycotic infection. Incubation of the Dorset's egg medium was carried out at 43 deg. C.

MACROSCOPICAL FINDINGS

TABLE I
DETAILS OF CASES SHOWING TUBERCULOUS LESIONS

No.	*Species*	*Source*	*Site of lesions*
1.	Herring Gull 4th Yr. ♂	Steart, Som. Found shot, 7.1.53.	Liver and spleen.
2.	Black-headed Gull 2nd Yr. ♂	Pill, Som. Shot, 27.9.53.	Intestines, spleen and attached to pancreas.
3.	Black-headed Gull ad. ♀	Pill, Som. Shot, 14.3.54.	Abdominal mass involving intestines and peritoneum. Bases of both lungs, spleen.
4.	Black-headed Gull ad. ♂	Pill, Som. Shot, 30.4.54.	Mass involving colo-rectum. 'Miliary' type tubercles liver, spleen, and attached to kidneys and pancreas.
5.	Black-headed Gull ad. not sexed.	Uphill, Som. Found dead, 28.11.54.	Intestines.
6.	Black-headed Gull ad. ♀	Mouth of Avon, Som. Found dying, 9.1.55.	Gizzard, mesentery, bases of both lungs and marrow of femur.
7.	Black-headed Gull ad. ♀	Pill, Som. Shot, 12.5.55.	Intestines, gizzard, liver, spleen, bases of both lungs and marrow of femur.
8.	Black-headed Gull ad. ♀	Avonmouth, Glos. Found dead, 22.5.55.	Intestines, liver, spleen.
9.	Black-headed Gull ad. ♀	Pill, Som. Found dead, 23.5.55.	Duodenum, liver, spleen, bases of both lungs.
10.	Black-headed Gull ad. ♀	Coltishall, Norfolk Found dead, 29.5.55.	Oviduct.

The relevant details of ten cases showing tuberculous lesions, subsequently confirmed by histological examination, are listed in Table I. All cases showed evidence of emaciation with marked atrophy of the skeletal muscles particularly the pectorals; fat depots were absent and the livers were much reduced in size. To the unaided eye typical tuberculous lesions appeared yellowish-white, occasionally greyish-white, in colour varying in size from a few mm. to over 1 cm. in diameter. The smaller tubercles were firm in consistency but the larger nodular masses formed by the coalescing of a number of lesions, often contained soft, yellow areas of necrotic tissue.

Abnormal darkening of the plumage as seen in tubercular Wood Pigeons (Harrison and Harrison, 1956) was not apparent although marked abrasion and roughening of the feathers, particularly in wings and tail, with loss of sheen, was noticed in the affected Black-headed Gulls. As a detailed examination of the feathers was not done, it is not possible to state whether this was due to an abnormal structure or due to excessive wear and lack of preening expected in a sick bird.

MICROSCOPY AND BACTERIOLOGY

The microscopical appearances of the various stages in the development of the tuberculous nodules which were found in the ten cases described

above, differed little from that given by Feldman for the chicken and other domestic poultry. A typical adult tubercle showed a central necrotic area, staining pink with the eosin counterstain, and containing large numbers of acid-fast bacilli morphologically resembling tubercle bacilli. Fat droplets were abundant particularly at the periphery of this avascular zone. Immediately adjacent to these collections of lipid laden histiocytes was a narrow zone of epitheloid cells arranged in ''giant-cell'' formation, beyond which was a further zone of inflammatory cells, predominantly histiocytes, plasma cells, lymphocytes and an occasional giant-cell system. Old tubercles were encapsulated by a thick zone of fibrous tissue with a minimal cellular response and showing no signs of calcification.

Material from cases 1, 3, 4 and 7 was inoculated on to slopes of Dorset's egg medium, and from the last three cases a growth of moist, dull white colonies appeared in 11-14 days at 43 deg. C. Smears made from these colonies and stained by the Ziehl-Neelsen method showed acid and alcohol-fast bacilli with some pleomorphism, chiefly of a coccal form. Colonies when placed in a saline solution readily emulsified to form a homogeneous suspension. Facilities for more detailed bacteriological investigations were not available and pathogenicity tests involving laboratory animals were not possible. Although not conclusive, the growth characteristics of the organisms isolated from infected organs suggest that the tubercle bacilli were of the avian type.

RESULTS AND DISCUSSION

The ten cases of tuberculosis described represents 10.3% of the 97 gulls included in this series but when the species are considered separately, 2.7% of the 38 Herring Gulls and 30% of the 30 Black-headed Gulls were infected. No evidence of the disease was found amongst the other species. It should be pointed out that the selective collection of sick Black-headed Gulls from one particular place resulted in four cases of the disease which may not otherwise have been found. Despite this possible bias, it is clear that tuberculosis is prevalent among Black-headed Gulls in the Bristol district and may well be an important mortality factor in this particular gull. Herring Gulls appeared to be surprisingly free from the disease but the small number of the other species examined does not permit any conclusions to be drawn as to the possible incidence of infection in these species.

According to Feldman, tuberculosis in chickens is a process which may have started months or years previously and since there is no reason to doubt that a similar process occurs in wild birds, it is difficult to pinpoint a source of infection in an area which, for the Black-headed Gull, is almost entirely an autumn and winter feeding ground. Many feed on pasture in the counties of Gloucester and Somerset and some must frequent fields in which domestic poultry have run. The possibility of infection from this source seems remote, when the chance of a gull ingesting tubercle bacilli, excreted by perhaps one or two infected fowls in a large field, is considered. Also, since the river bank and adjacent meadows at the estuary of the River Avon where the infected gulls were found, is not normally frequented by healthy adults for feeding, this does not appear to be a potential source of infection. A more likely source is the effluence from sewers in the River Avon and elsewhere on which some 2,000–3,000 gulls

rely in mid-winter for food. One particular factory sewer regularly emits quantities of offal from pigs—a domestic animal in which tubercle bacilli of the avian type can occur (see Williams Smith, 1954).

TABLE II
CAUSES OF DEATH IN HERRING AND BLACK-HEADED GULLS

Cause of death	Herring Gull		Black-headed Gull	
	Number	%	*Number*	%
Tuberculosis	1	2.6	9	30
Aspergillosis	14	36.8	—	—
Other infections	2	5.2	5	16.7
Mechanical injury	6	15.8	5	16.7
Shooting (collected)	2	5.2	1	3.3
Starvation (cause unknown) ...	4	10.4	7	23.3
Neoplasm	2	5.2	1	3.3
Other causes	3	8.0	2	6.6
Not determined	4	10.4	—	—

In Table II the causes of death for both the Herring and Black-headed Gulls examined in this present series are listed. Sick gulls collected by shooting are included under the disease from which they would have eventually died. It may be noted that tuberculosis is the largest single mortality factor in the Black-headed Gull whilst aspergillosis, although confined to first and second year birds (not shown in the table), is the main cause of death in the Herring Gull. On the other hand, tuberculosis is comparatively rare in the Herring Gull and aspergillosis unrecorded for the Black-headed Gull.

SUMMARY

From a series of 97 gulls found dead or dying, one Herring Gull and nine Black-headed Gulls showed advanced tuberculosis at post mortem, probably originating from the alimentary tract. These ten cases are described with notes on the histological and bacteriological findings.

The incidence of tuberculosis was found to be notably high in the Black-headed Gull and this is compared with other mortality factors operating in the same series.

ACKNOWLEDGMENTS

Thanks are due to those ornithologists who so willingly supplied many of the gulls examined in this series, and also to Dr. A. H. Linton, Lecturer in Bacteriology (Veterinary), University of Bristol, for helpful criticisms of the manuscript.

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Avian Tuberculosis in a Wild Shelduck in Association with an Exceptional Parasitic Burden

by Dr. Jeffery G. Harrison

Received 10th August, 1957

In the present state of our knowledge, tuberculosis must still be considered a rare disease in wildfowl, other than in captivity. In recording a case in a Wigeon, *Anas penelope*, from the Orkneys,[1] we gave details of the occurrences in wildfowl, and these need not be repeated, except to say that this case was the first fully proven one that we could trace in Europe. One further reference has since been discovered and which I had missed, Quortrup and Shillinger[2] recording tuberculosis in America in a Mallard, *Anas platyrhynchos*, Shoveler, *Anas clypeata*, two Green-winged Teal, *Anas crecca carolinensis*, two Pintail, *Anas acuta*, and two Redheads, *Aythya americana*. These authors stated that the disease was always marked with obvious lesions and that the liver was most often the primary organ involved. Details of confirmatory cultural tests are not given.

A second case from Birtain has since come my way, when on 20th April, 1957, my dog found a recently dead first summer female Shelduck on the fresh marshes of the Isle of Sheppey, Kent. Its plumage was stained with dried blood and it had been killed by having its head largely chewed off by some animal. I noticed that it was extremely thin and it seemed possible that it had been killed in its weakened state by some predator and then rejected as food. I have already recorded a similar case in a Short-eared Owl, *Asio flammeus*, which had been killed and left and which was found to be suffering from advanced tuberculosis.[3]

On post-mortem the whole peritoneum of the Shelduck was grossly diseased; large plaques and nodules of hard, whitish material matted the intestines together. A large plaque had formed over the surface of the liver, binding it to the under surface of the sternum, which was partly eroded by it. The liver, gall-bladder and kidneys were normal. There were two small nodules on the pericardium and the left axilliary lymph glands were enlarged, white and caseous. The right lung was partly destroyed by a well-circumscribed white oval tumour, 20 x 15 x 15 cms. in size.

Sections were cut and stained with Haematoxylin and Eosine and by the Ziehl-Neilsen technique. Dr. Keith Randall reported on the former that the lesions were caseous, having only an ill-defined fibrous wall and insignificant cellular reaction. The Z-N stain revealed vast numbers of pleomorphic acid-fast organisms. These were cultured on Finlayson's medium and proved to be typical avian tuberculosis. This was confirmed

by Dr. A. McDiarmid, who added that the culture showed no sign of alteration to the rough phase, which is so common in those cultures recovered from tuberculous Wood Pigeon.

At post-mortem a large number of intestinal parasites were seen. The viscera were therefore sent to Dr. E. J. L. Soulsby at the School of Veterinary Medicine, Cambridge. His report was as follows:—

Trematodes	*Paramonostomum alveatum*
	Maritrema subdolum
	Echinostoma revolutum
	Himasthla elongata
Cestodes	*Hymenolepis gracilis*
	Hymenolepis sp.

The first two trematodes were present in enormous numbers and the first cestode was present in large numbers. Whether there is any relationship between the extremely heavy parasitic burden in this duck and its tuberculosis is difficult to decide at present. Of two other adult Shelduck from the north Kent marshes examined by Dr. Soulsby for parasites, one was negative, the other carried large numbers of cestodes and a few trematodes. Dr. Soulsby added of the tuberculous Shelduck "A more varied parasitic fauna I have yet to see in any bird."

Acknowledgements:—I am most grateful to those who have helped me with this interesting case, particularly Dr. Keith Randall, Consulting Pathologist; Dr. A. McDiarmid of the Agricultural Research Council Field Station, Compton, and Dr. E. J. S. Soulsby of the School of Veterinary Medicine, Cambridge.

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[2] J. G. Harrison. "An unusual case of Tuberculosis in a Wild Bird." *Ibis*, Vol. 85, pp. 516–7. 1943.

[3] E. R. Quartrup and J. E. Shillinger. "A Review of 3,000 wild bird autopsies on Western Lake areas." *Journal Amer. Vet. Ass.*, Vol. 99, pp. 382–387. 1941.

Independent and Dependent Song

by Mr. Noble Rollin

Received 16th August, 1957

Newton (1896, p. 892) long ago pointed out that a broad view of the term song had to be taken. Nicholson (1936, p. 29) classified song as "full or true song" and "sub-song" and defined other notes "analogous to true song, but . . . not generally regarded as songs" as "breeding notes." Tinbergen (1956) regards the essence of song notes is that they "repel other males and attract females," a definition which includes many of the "breeding notes."

Although it is certain that there is more than one type of song involved in any broad definition, no simple rule appears to be available for separating typical song from other song. It is well known, however, that typical song birds will sing in isolation. In fact the old practice of caging for song a bird like the Skylark, *Alauda arvensis* Linnaeus, or Blackbird, *Turdus merula* Linnaeus, in the heart of a town, depended on this ability to sing

well in isolation. Nicholson (1936, p. 7) states that in the wild a typical song bird "will go on singing for weeks at the right season with no other songster within miles." A Skylark in the wild in isolation sang a total of 46½ minutes of song in one day (Rollin, 1956). On the other hand some of the songs which repel males and attract females lack this characteristic of typical song. The ability of typical singers to sing in isolation can be tested for experimentally simply by isolating a member of the species. It is suggested that such a test is a useful experimental means of separating typical song from other song.

Basically the two types of song differ in that typical song can be produced freely *independently* of the stimulation of other members of the species, whilst other forms of song are *dependent* on the stimulation of other members of the species.

The following are some results of such experimental tests:

A male Reed Bunting, *Emberiza schoeniclus* (Linnaeus), reared from a nestling, was kept in isolation from other Reed Buntings during the winter and spring (1953–1954) and sang freely. First it sang a large amount of sub-song, then day after day the louder short territorial song. A Blackbird observed in 1957 and an Indigo Bunting, *Passerina cyanea* (Linnaeus), observed in 1956, similarly sang large amounts of sub-song and louder territorial song in isolation from their species. As an example of the amount of song given in isolation, the Blackbird, on 3rd February, 1957, from commencement of sub-song at 08.44 to noon sang a total of 109 minutes of sub-song; in an all-day watch (Ref. No. 160) on 16th April, 1956, the Indigo Bunting in isolation sang 355 loud territorial songs in one day. These observations on three typical territorial song birds indicate that sub-song and loud territorial song are equally independent.

The Cut-throat Weaver, *Amadina fasciata* Gmelin, has a song-display in which it stands erect to show the crescentic red mark on its throat, and fluffs out the feathers of the lower breast to show a chestnut patch; at the same time it gives its song. A male kept isolated from other Cut-throat Weavers for nine months (1956–1957) sang and displayed freely every day. In an all-day watch (Ref. No. 188) on 28th June, 1957, it gave in isolation a total of 224 song-displays during the day. The song of the song-display of this species is therefore independent song.

A pair of Mallards, *Anas platyrhyncha* Linnaeus, were kept in isolation from other Mallards from mid-February (1950) to the end of the breeding season. During this period the birds bred normally but the drake never gave the well-known song-display which consists of a whistling note accompanied by an upright posture. Eventually when confronted by other drake Mallards, the drake immediately gave the song-display, and has since, in association with other Mallards, given it in the normal way (Rollin, 1957). From this it is evident that the drake only gave this song-display when stimulated by the presence of other drakes and was capable of continuing indefinitely and breeding without giving the song. The song of the song-display of the Mallard is therefore dependent song.

A male Lady Amherst Pheasant, *Chrysolophus amherstiae* (Leadbeater) kept in isolation, crowed freely (1957). Prior to being isolated it had given its song-display freely to a hen of the species. The song-display consists of a hiss accompanied by a plumage display. Another male

reared from an egg by a Silkie Fowl, *Gallus gallus*, in 1953 and kept isolated from the sight (only) of its own species, gave its strongest song-displays to Silkie Fowls, but also displayed to other species. The song-display was never given in the absence of some kind of bird to which the pheasant could display. The Lady Amherst Pheasant is therefore an example of a species which has two well developed and quite different types of song, one independent (the crowing), the other dependent (the song of the song-display).

The instrumental song of the Silver Pheasant, *Gennaeus nycthemerus* (Linnaeus), which consists of a loud beating of the air with the wings, was found to be an independent song. A bird kept in isolation from its species from 1951 to 1957, sang freely each day during the song season.

A male Red-backed Parrakeet, *Psephotus haematonotus* (Gould), kept in isolation from its own species from 1950 to 1953 sang freely during the song season. In an all-day watch on 27th June, 1950, the bird gave a total of 335 songs (Rollin, 1955). A male Green Parrakeet, *Psittacula krameri* (Scopoli), also sang freely in isolation from its own species over a period of a month, showing that its song was independent. This species has a continuous type of song and in an all-day watch (Ref. No. 169) on 30th May, 1956, this bird in isolation sang for a total of 89 minutes during the day.

A male domestic fowl, *Gallus gallus*, crowed daily in the summer of 1956 at Skibotn in Arctic Norway. This bird was isolated from all other males of the species as it was the only one in the district. The observation shows that the crowing of the fowl is independent song.

A Corn-Crake, *Crex crex* (Linnaeus), was heard ''craking'' freely near Glanton in the evenings of 12th to 15th July, 1957, inclusive. This species does not now normally occur in the district and this individual was the only one ''craking.'' The ''crake'' of the Corn-Crake is therefore independent song.

A male Oystercatcher, *Haematopus ostralegus* Neumann, was reared from an egg by Silkie Fowls in 1953. It was kept isolated from its own species during three years (from hatching). When mature it ''trilled'' frequently at Silkie Fowls but not at any other species of bird. It never ''trilled'' in the absence of Silkie Fowls. The ''trilling'' of the Oystercatcher is therefore dependent song; the dependence in this instance being transferred to Silkie Fowls.

In the Common Gull, *Larus canus* Linnaeus, the ''long call'' is regarded as the song, whilst in the Kittiwake, *Rissa tridactyla* (Linnaeus), ''choking'' appears to have taken over the function of song (Tinbergen, 1956). A fully mature Common Gull kept in isolation from its own species for over a year (1956–1957) gave only the single call note of a bird about to fly. It never gave the ''long call.'' From this negative evidence it appears that the song of the Common Gull is dependent song. At Marsden, County Durham, on 17th and 24th February, 1957, a single adult Kittiwake was occupying a nesting ledge in one of the Kittiwake colonies. No other members of this particular colony had yet arrived, although Kittiwakes were present elsewhere. This bird stayed on the ledge and also flew out over the sea and back to the ledge as Kittiwakes normally do when in a colony. It, however, never displayed in any way on the ledge and there

was no "choking." It appears, therefore, that the song-display ("choking") of this species is dependent song.

From the above it will be seen that whilst independent song, (i.e. true or typical song) occurred, as would be expected, in the Passeres tested (*Turdidae*, *Fringillidae*), it also occurred in parrakeets (Psittacidae), pheasants and fowls (Phasianidae) and rails (Rallidae). On the other hand, in examples of ducks (Anatidae), waders (Charadriidae) and gulls (Laridae) the song was found to be dependent song. The Lady Amherst Pheasant was interesting in having two different and well developed songs, one independent, the other dependent. In song-displays it was found that the song may be either independent (Cut-throat Weaver) or dependent (Mallard). Sub-song was found to be as freely independent as typical territorial song.

It seems likely that independent song is an original or deep seated type of song which probably occurred first as sub-song. It has now evolved in many instances into distinctive forms to serve various functions, notably typical territorial song. Dependent song appears to be more in the nature of non-song notes which have been impressed into use as song notes and which have the function of song, but lack the essential quality of independence.

In the wild, independent song is probably an important and safe outlet for male energy, reducing in this way unnecessary fighting and other activities. This aspect of the song may also account for the relatively contented behaviour in cages of male independent singers when in full breeding condition.

All observations mentioned above, with the exception of those on the Skylark, Corn-Crake and Kittiwake, were made at the World Bird Research Station at Glanton, Northumberland.

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A new race of Babbler *(Trichastoma abbotti)* from Central Annam

by Mr. R. W. Sims

Received 6th September, 1957

Arising from an enquiry made by Mr. H. G. Deignan of the United States National Museum it appeared that some specimens of the babbler *Trichastoma abbotti* in the British Museum (Natural History) represent an undescribed race. Mr. Deignan has asked that a name should be given them so that it can be included in the section of Peter's *Check List of the Birds of the World* on which he is working. The specimens were examined

by Mrs. B. P. Hall but she left for Africa before a note could be prepared; she has now given me permission to publish a description. I agree with her that the specimens have distinctive characters and appear to represent a valid race which is named as follows:—

Trichastoma abbotti alterum new race.

Description: Nearest to *williamsoni* Deignan, 1948, but the crown is duller in colour and the forehead less streaked; the remainder of the upper parts are also slightly duller being more chestnut and less rufescent. The throat is greyer and more distinctly streaked while the breast has more of an ashy than olivaceous wash. The flanks are slightly paler and duller being more cinnamoneous than rufescent; they also have a somewhat ashy wash.

Type: B.M.Reg.No.1927.6.5.1081. Collectors' No. 3054. Adult female. 7th February, 1927. Thua-Luu, Central Annam. Franco-British Indo-China 3rd Expedition. J. Delacour and W. P. Lowe.

Remarks: There are three specimens in addition to the type, one being topotypical. The only variations appear to be slight differences in the clearness of the colour of the breast and in the one male in the series, not topotypical, the colour of the flanks is somewhat richer in tone.

Range: Central Annam and probably northern Laos. (Mr. Deignan has examined a specimen from Wiang Chan which agrees with this diagnosis.)

The four specimens were listed by Delacour and Jabouille (1931, Oiseaux Indochine Francaise, 3:285–286) as *Malacocincla sepiaria tardinata* Hartert.

On *Strix poensis* Fraser, Proc. Zool. Soc., p. 189, 1842

by Mr. C. W. Mackworth-Praed *and* Capt. C. H. B. Grant

Received 10th May, 1957

Sclater, *Syst.Av.Aethiop.* 1, 1924, does not give this name, but Bannerman, *Bds.Trop.W.Afr.* 3, p. 11, 1933, in a footnote states that this name has "generally been placed in the synonymy of *Tyto alba affinis*" Blyth, *Ibis*, p. 388, 1862. Chapin, *Bds.Belg.Congo*, 2, *Bull.Amer.Mus.Nat.Hist.* 75, p. 404, 1939, states "and I think *T.a.poensis* (Fraser) may be a valid race."

Fraser's description is in Latin and translated into English reads: "Bill bluish horn; face white; facial disc feathers very compact and silky, outside ring of feathers have the tips white, centre of feathers yellow, bases paler; front part of cheek feathers black; body above brownish yellow with scattered white and purple,* all feathers with the shafts two-thirds white spotted with white with black spaces between; sides of neck yellow; back of neck spotted; primaries and secondaries with nearly obsolete bands, sparsely sordid purple and white; tail hardly forked, reddish yellow, barred fuscous and sparsely spotted with white; underside and legs yellowish white, with blackish angular spots; feet sparsely hidden by woolly white; toes black beset with white hairs."

This description agrees well with *Tyto alba* especially that of the facial disc, the shaft markings of the upperside and the spotting of the underside.

* Red, reddish, violet, brownish, etc.

Strix poensis Fraser, has priority over *Strix affinis* Blyth, 1862, and if the Fernando Po race did not differ from that of the mainland it would have priority over Blyth's name.

We are, however, of the opinion that *Strix poensis* Fraser, should be confined to the Fernando Po race of the Barn Owl, as *Tyto alba poensis* (Fraser), since Chapin op.cit. says that the two specimens from that Island in the American Museum of Natural History, New York, "show more contrast in the vermiculations of crown, back and wing-coverts than those of the mainland."

On the Races of *Prinia pectoralis* A. Smith

by Dr. J. M. Winterbottom

Received 12th July, 1957

Vincent (*A Check List of the Birds of South Africa*, 1952) follows Roberts (*The Birds of South Africa*, 1940) in recognizing three races of *Prinia pectoralis*, which Roberts characterized as follows:—

P.p.hewitti (Roberts), with a considerable amount of grey on the underparts of the body, above slightly darker.

P.p.malopensis (Sharpe), a more pallid race.

P.p.pectoralis (Smith), intermediate between the other two races.

Thanks to the courtesy of the Director (Dr. V. Fitzsimons) and Mrs. Campbell of the Transvaal Museum and of the Director (Miss M. Courtenay-Latimer) of the East London Museum, a series of 76 specimens from all over the range of the species, but chiefly from the published ranges of *pectoralis* and *hewitti*, was assembled. It was immediately obvious that *malopensis* was a good race, at once separable from the aggregate by the paler coloration of the back feathers, both the dark centres and the lighter margins. But *hewitti* was another matter.

Roberts's original description listed three points of difference between *hewitti* and *pectoralis*; the amount of grey on the underparts; the extent of rufous on the back; and the shade of the ear-coverts. In the series assembled, however, no geographical distribution was discernable in these three variables. The bird with the darkest grey underparts came from Touws River (c. 33° 30′ S., 20° E.), which is a place outside the published range of the species as given by Roberts and Vincent; and although a bird from Grahamstown was quite dark, it could be matched by another from Prieska, well inside the supposed range of *pectoralis*. The other characters were similarly randomly distributed. In short, *hewitti* is based on individual variation and only two races are recognizable, as follows:—

1. *Prinia pectoralis pectoralis* (A. Smith), *S.A.Comm.Advert.*, 4, 213, 1829: "Karroo country to the north of the Oliphant's River"—Bitterfontein may be suggested as a restricted type locality.

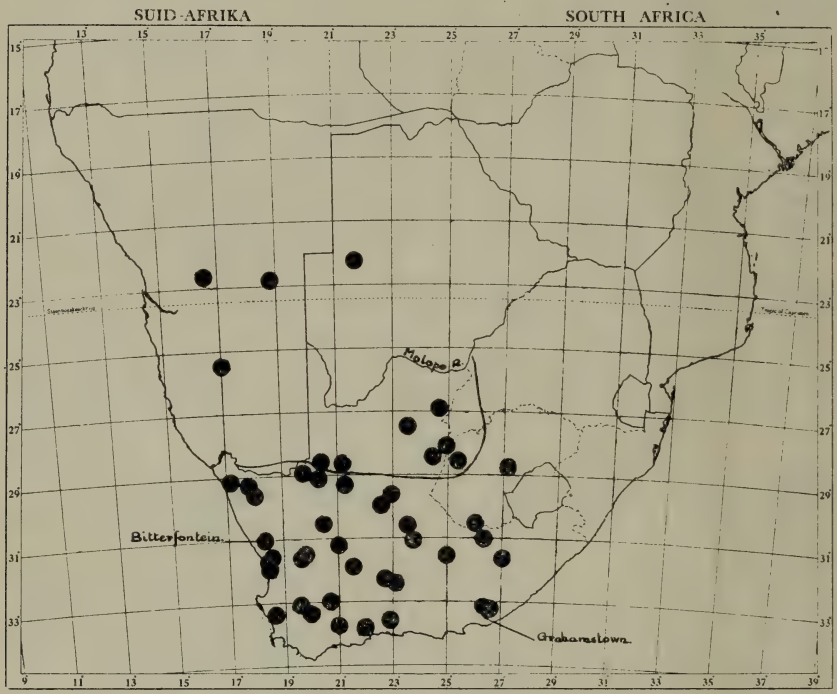
Synonyms: *P.ocularia* (A. Smith), *Ill.Zool.S:.Afr.*, *Aves*, pl. 75, fig. 1, 1843: "Northern districts of Cape Colony;" and *P.o.hewitti* (Roberts), *Ann.Tvl.Mus.*, 15, 1932: 31. Aerodrome, Grahamstown.

Range: From Mamre (Malmesbury district), Barrydale, Oudtshoorn and Grahamstown north to the Orange River in the west and to the western Transvaal in the east.

2. *Prinia pectoralis malopensis* (Sharpe), *Bull.B.O.C.*, 13, 1903: 80: Molopo River, Bechuanaland.

Range: From Aughrables and Upington north through South West Africa to the limits of Damaraland and east across the Kalanari to Boshoff, in the western Orange Free State.

The work on which this paper is based was done while the author was holding a Senior Bursary of the C.S.I.R., Pretoria.



Range of *Prinia pectoralis*. Dots show localities from which specimens have been examined; the line marks the approximate boundary between the races *pectoralis* and *malopensis*.

Further Note on the Eggs of the Black-bellied Bustard *Lissotis melanogaster* (Rüppell)

by Captain C. R. S. Pitman

Received 26th July, 1957

Vide *Bull.B.O.C.* 77 (5), 1957, pp. 85–86, additional measurements of 19 eggs from Southern Rhodesia, all presumably referable to *Lissotis melanogaster notophila* Oberholser, average 58.4 x 51.5 mm., and of 26 sets, the clutch size in 15 is C/1 and in 11 C/2. Maximum measurements (both in the same egg) are 61 x 55 mm., and minimum (also in the same egg) 54 x 48 mm.

The Juvenile Plumage of *Warsanglia johannis*

by Mr. John G. Williams

Received 14th July, 1957

Through the kindness of Mr. A. R. Tribe of Hargeisa, British Somaliland, I have had the opportunity of examining a specimen of *Warsanglia johannis* Stephenson Clarke in the previously undescribed juvenile plumage.

The specimen, a male, was collected by Mr. Tribe at Tagair, 14 miles north of Erigavo, north-eastern British Somaliland, altitude 5,800 ft., on 26th July, 1956. Except for structural differences and lack of yellow on the wings the juvenile Warsangli Linnet resembles a juvenile of the European Goldfinch, *Carduelis carduelis*.

Description of juvenile male *Warsanglia johannis*: upperparts pale greyish-buff, paler on the forehead and rump, streaked throughout dark brown; underparts buffish-white with dark brown spots and streaks on chin, throat, breast and flanks; abdomen and under tail-coverts unspotted; wings and tail similar to adult but wing coverts edged buff. The colours of the soft parts were not recorded by the collectors.

At Mr. Tribe's request this specimen is being presented to the British Museum (Natural History).

Notes on *Aëthocorys personata* and the Description of a New Race

by Mr. John G. Williams

Received 14th July, 1957

During the past two years I have undertaken several safaris to the Northern Frontier Province of Kenya Colony, when I have had the opportunity of studying *Aëthocorys personata* (Sharpe). I have found the species in four areas of Kenya. *A.p.intensa* Rothschild was recorded from two localities in the Isiolo district—along the Jombeni tract and twenty miles from Isiolo on the Garissa road. *A.p.yavelloensis* Benson was discovered to be a common bird on the black lava Dida Galgalla desert north of Marsabit. A third, very distinct race—as yet undescribed—was discovered on the Marsabit plateau. I have pleasure in naming this new Masked Lark

Aëthocorys personata mcChesneyi

in honour of Colonel Donald S. McChesney, who was my enthusiastic companion in exploring the Marsabit plateau and the waterless lava wastes of the Dida Galgalla desert

Description: A.p.mcChesneyi differs from the other three known races of Masked Lark in being paler and sandier below; in having the outer webs of the outer tail feathers reddish-white, not pale brown; upperparts paler than other races, sandier and slightly more reddish. Soft parts: iris dark brown; bill dull pink, paler and tinged yellow on lower mandible (note: the pink fades rapidly after death to yellowish-horn with a pink tinge); feet pinkish-white.

Measurements: adult males, exposed culmen 14–16; wing 84–87; tail 51–58 mm. (7 measured). adult females: exposed culmen 14–16; wing 82–86; tail 47–51 mm. (6 measured).

A juvenile female collected on 21st June, 1955, resembles the adult but

has conspicuous buffish-white spotting to the tips of the feathers of the crown, mantle and wing coverts: the dark facial markings are less distinct. Soft parts, iris dark brown; bill white, tinged yellowish-pink; feet pinkish-white.

Type: Male adult; in slightly worn plumage and in breeding condition. Loc. Marsabit plateau, 6 miles north of Marsabit boma, Northern Frontier Province, Kenya Colony; altitude 4,000 ft., 22nd June, 1955; collector J. G. Williams.

Measurements: exposed culmen 16; wing 87; tail 51 mm. In British Museum (Natural History) Collection: B. M. Reg. No. 1956:6:6.

The four races of *Aëthocorys personata* fall into two very distinct groups, which may possibly be recognized as two species when adequate material of nominate *personata* becomes available and when its range of variation is known. The first of these groups, *A.p.personata* and *A.p.mcChesneyi*, are both pale birds in which the general tones are richer and both lack a clearly differentiated breast patch. The second group, *A.p.intensa* and *A.p.yavelloensis*, are much darker birds in which the general tones are more drab, dark brown or grey: both possess a distinct greyish breast patch.

Distribution

A.p.personata is known only from the type locality, Sassabana, near Milmil, eastern Abyssinia.

A.p.intensa was described from Chanler's Falls, Northern Guaso Nyiro, Northern Frontier Province, Kenya Colony, but has also been found in two localities near Isiolo, a little to the south of the type locality.

A.p.yavelloensis was described from 10 miles west of Yavello, southern Abyssinia, but the main centre of abundance of this race is the black lava wilderness of the Dida Galgalla Desert in northern Kenya Colony.

A.p.mcChesneyi, so far as is known, is confined to the plateau of Marsabit mountain, Northern Frontier Province, Kenya Colony.

Habits

The three Kenya races of Masked Lark appear to prefer open, sparsely grassed country, with or without scattered bush.

A.p.intensa was found on black cotton soil with scattered acacia bush, and on open plains strewn with red-brown lava rocks.

A.p.mcChesneyi occurs on red-brown volcanic soil with scattered patches of sparse acacia bush. *A.p.yavelloensis* was most abundant in the most desolate black lava desert where there was little vegetation.

Aëthocorys personata was often found associated with *Eremopteryx*, but did not flock with the sparrow-larks, keeping in separate small parties of from a pair to a dozen or more birds. When alarmed they sit motionless either on or beside a lava rock, or on the bare ground. They were not observed to settle in thick grass. In general *Aëthocorys* behaves very like *Calandrella*, but I consider that *Aëthocorys* should be maintained as a distinct genus on account of its bill structure and distinct facial markings.

The food of *A.p.intensa* was found to consist of about 70 per cent seeds and vegetable matter and 30 per cent insect fragments, especially Orthoptera. *A.p.mcChesneyi* and *A.p.yavelloensis* were found to take a much greater proportion of insect food—up to 95 per cent—and their favoured item of diet was the eggs of locusts and grasshoppers. Both these races were observed several times digging in sandy soil and then pulling out

and feeding on capsules of locust and grasshopper eggs. The bill structure of *Aëthocorys*, in which the cutting edges of the upper mandible overlap the lower mandible, constitutes an ideal tool for extracting grasshopper egg capsules from the ground.

Breeding

Unfortunately the nest and eggs of *Aëthocorys* were not located.

A.p.intensa was found to be in full body moult in March and in full breeding condition during late May and early June.

A.p.yavelloensis was completing moult in January and by March was in complete fresh plumage and in full breeding condition.

A.p.mcChesneyi may have a more extended breeding season. A juvenile in very fresh plumage was secured on 21st June, at a time when many adult birds were in full breeding condition. The plumage of these June adults was slightly worn.

Voice

Mr. M. E. W. North has kindly recorded the notes of *A.p.intensa* and *A.p.mcChesneyi* as follows:—

A.p.intensa: near Isiolo, 17th June, 1955. A single bird when flushed made a call "tee, ti-ti"—a trilled and burred whistle, rather loud, all three notes at the same pitch estimated at about 2,300 cycles; but when flushed again the pitch was higher, about 3,000 cycles.

A.p.mcChesneyi: near Marsabit, 22nd June, 1955. Calls of the birds here were not like the single call noted at Isiolo. At Marsabit there were many birds, mostly in parties, and the first indication of the presence of a party on the ground (and therefore still invisible) was often the typical call, which is a soft whistle, slurred downwards, "Pee-ay." Nearer at hand, the call is clear, plaintive and shrill. In addition to the slurred "Pee-ay," there are often single "Pee" calls and soft upward-slurred calls, "Coo-ee," also, I believe, a sharp metallic "tic." The pitch of the "Pee-ay" and "Pee" calls seem to begin regularly around 3,000 cycles; two "Coo-ee" calls varied, one starting at 2,000 and the other at 2,600, which was also the apparent pitch of the "Tic."

I should like to record my appreciation of the assistanc given to me while studying *Aëthocorys* in the field by Colonel R. Meinertzhagen, Colonel D. S. McChesney, Mr. M. E. W. North, Mr. David Roberts and Mr. T. Adamson of Kenya Royal National Parks. I am also greatly indebted to Mr. J. D. Macdonald of the British Museum, and to Colonel R. Meinertzhagen for comparing recently collected Kenya specimens with material of *Aëthocorys personata* in the National Collection.

Four New Bird Records for Eastern Africa

by Mr. John G. Williams

Received 14th July, 1957

In May 1956 and March 1957 zoological expeditions from the Coryndon Museum, Nairobi, worked the Bwamba Forest, western Uganda. In the course of these expeditions specimens were obtained of four species of birds previously unrecorded in Eastern Africa.

1. *Corythornis leucogaster leopoldi* (Dubois)

One adult male; testes slightly enlarged; Ntotoro, Bwamba Forest, western Uganda; alt. 2,600 ft., 4th March, 1957.

This specimen, the only one encountered, was collected in a Japanese

mist net. The net was set near the ground, in undergrowth alongside a narrow stream in dense forest. The stomach contained a mass of insect fragments, mainly Coleoptera.

2. *Malaconotus cruentus adolfi-friederici* Reichenow.

One adult female, non-breeding condition, and 1 immature male; Ntotoro, Bwamba Forest, western Uganda; alt. 2,600 ft., 10th March, 1957; collector Mr. R. Carcasson.

This species inhabited dense tangles of creepers and foliage in very high undergrowth in open iron-wood forest. The birds were extremely shy and difficult to observe. Attention was drawn to their presence by their loud "chuck—chuck" call-notes. Both specimens had been feeding on Orthoptera (grasshoppers and mantis) and Coleoptera. The adult female had just completed moult into fresh plumage; the immature male was in full body moult.

3. *Malimbus nitens microrhynchus* Reichenow

One adult male; full breeding condition; Ntotoro, Bwamba Forest, western Uganda; alt. 2,600 ft., 30th May, 1956; collector Mr. N. Mitton.

One adult male, 1 adult female; both in full breeding condition; Ntotoro, Bwamba Forest, western Uganda; alt. 2,600 ft., 5th March, 1957; collector Mr. J. G. Williams.

This Malimbe was found to be not uncommon in dense swamp forest and at the edge of iron-wood forest. In the field this species was easily recognized by its bluish-white, not black, bill. In March 1957 several nests of this weaver, two of which were being built, were found attached to branches overhanging a small forest pool, about three feet above the water. One of the old nests had been taken over as a nesting site by a pair of Dusky Blue Flycatchers (*Pedilorhynchus comitatus stuhlmanni* Reichenow). The stomachs of the two Malimbe collected in March 1957 contained Lepidopterous larvae and pupae. ,

4. *Nigrita luteifrons luteifrons* Verreaux

One adult male, 1 adult female; gonads slightly enlarged; Mongiro, Bwamba Forest, western Uganda; alt. 2,500 ft., 13th March, 1957; collector Mr. J. G. Williams.

One juvenile male; Ntotoro, Bwamba Forest, western Uganda; alt. 2,600 ft.; 4th March, 1957; collector Mr. J. G. Williams.

The adult male and female were collected from the top of an Albizzia tree at the edge of swamp forest. They were extremely active little birds and behaved more like small sunbirds than waxbills. Insect fragments, including Lepidopterous larvae, and a few small seeds were found in their stomachs. The juvenile male resembles the adult female but is darker above, especially on the crown and lacks the black feathering around the eyes. It was shot in a fruiting fig tree; its stomach contained only fig fragments.

I should like to take this opportunity of expressing my gratitude to Major B. Kinloch, Game Warden of Uganda, for his courtesy and co-operation in granting permission to members of the Coryndon Museum Staff to collect ornithological specimens in the Bwamba Forest; to Mr. W. Pridham of the Uganda Game Department, Fort Portal, for many kindnesses and assistance in the field; and to my colleagues, Mr. R. Carcasson and Mr. N. Mitton, for their energetic help in collecting many valuable specimens.

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